

PASSAGE:

Territorial Reciprocity in the Design of Access

by Louise Hara
B.A., Williams College, 1978

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For my father

PASSAGE:

Territorial Reciprocity in the Design of Access

by
Louise Hara

Submitted to the Department of Architecture on May 10, 1985 in partial fulfillment of the requirements for the degree of Master of Architecture.

ABSTRACT

This thesis investigates how forms and their territories are used to affect the quality of passage. Form, motion, and sequences relate the passages which affect our perception of the environment. The thesis is a journey through many passages in order to capture or mark the quality of the spatial experience through observation and design.

Forms and their control of territories, and the observer and his associations to those territories are examined to develop a context for the study of passage as a reciprocal exchange between space and form. Motion in passage is explored as a means to relate the parts to the whole in the organization of place. Observations of built examples serve as references which reflect the variations and continuities of passage. Three typologies of passage are depicted: room-to-room, corridor, and field. Each provides the opportunity to investigate the transformation of the forms.

The observations are used to stimulate the design and planning for a site in Warrenton, Virginia. The first focus will be the passages that tie the site together, incorporating a variety of public and private functions. The second focus will be at the building size where the design will be directed to passages within a library/museum.

Thesis supervisor: Maurice Smith
Title: Professor of Architecture

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Paul, Jeff, Sandy and Cathy, my 10-485 mates, I thank for food, amusements, sirens and support throughout our many hours there. My friends in Maurice's studio provided insights and inspiration through their questions and ideas. Ilene Weisberg gave invaluable assistance in the production of this manuscript. Last but not least in this long list, I thank my parents, sisters and Wayne for their encouragement and support.

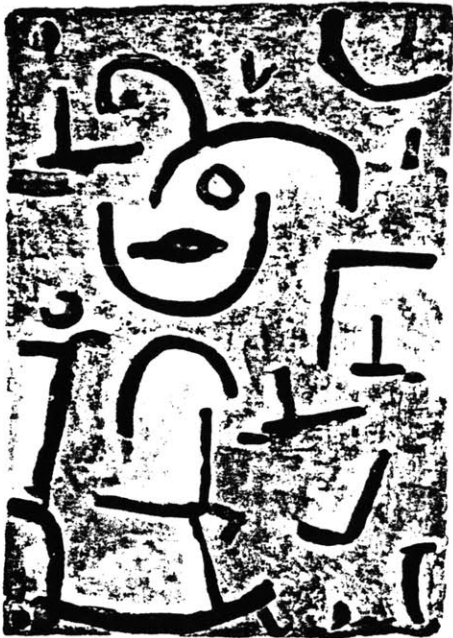
Formalism is form without function. When we look round us today, we see all sorts of exact forms; whether we like it or not, our eyes gobble squares, circles, and all manner of fabricated forms, wires on poles, triangles on poles, circles on levers, cylinders, balls, domes, cubes, more or less distinct or in elaborate relationships. The eye consumes these things and conveys them to some stomach that is tough or delicate. People who eat anything and everything do seem to have the advantage of their magnificent stomachs. They are admired by the uninitiated formalists. Against them the living form. The initiate divines the primordial living point; he possesses a few living atoms; he possesses five living, ideal elements, the pictorial pigments, and he knows of a little grey spot whence one can leap successfully from chaos to order.

He has a presentiment of procreation. He has a certain knowledge of the first action, can move things into being and make even their motion visible. His motion leaves traces in them and there you have the magic of life. And for the rest there is the magic of experience.

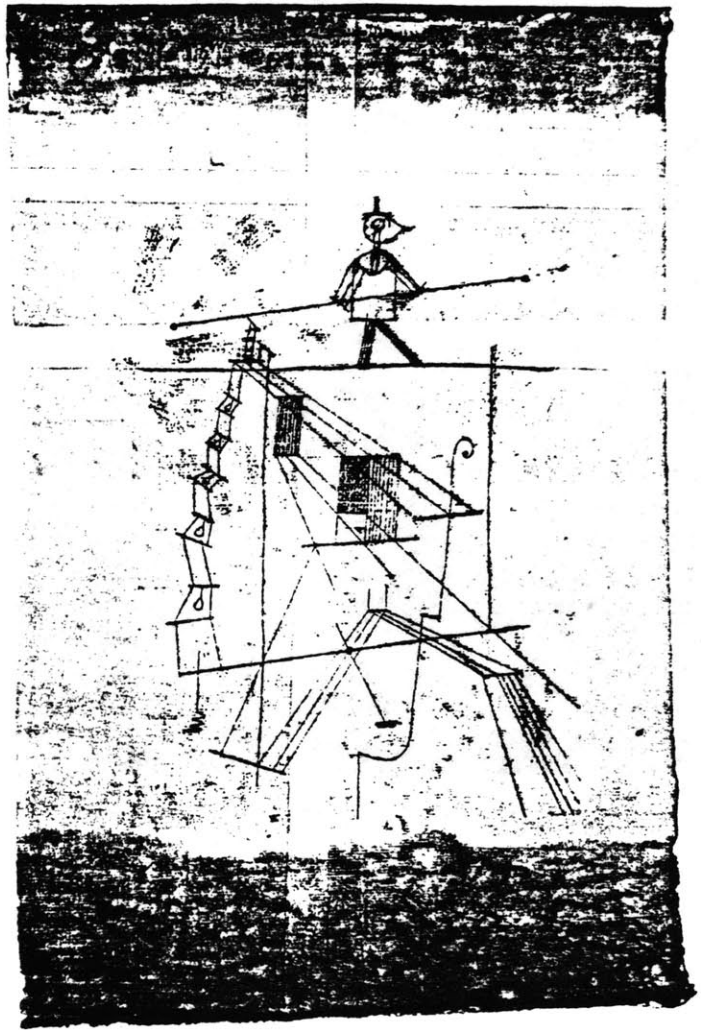
Metalogic is concerned with the smile, the gaze, all the seductions between good and evil. The investigation of functions never ceases, and yet there are still, even today, plenty of obstacles, thank God perhaps. For in the face of the mystery, analysis stops perplexed. But the mystery is to share in the creation of form by pressing forward to the seal of mystery.

- Paul Klee¹

¹Jurg, Spiller, ed. **Paul Klee Notebooks Volume 1: The Thinking Eye.** New York: Wittenborn, 1961. pp. 1, 168.



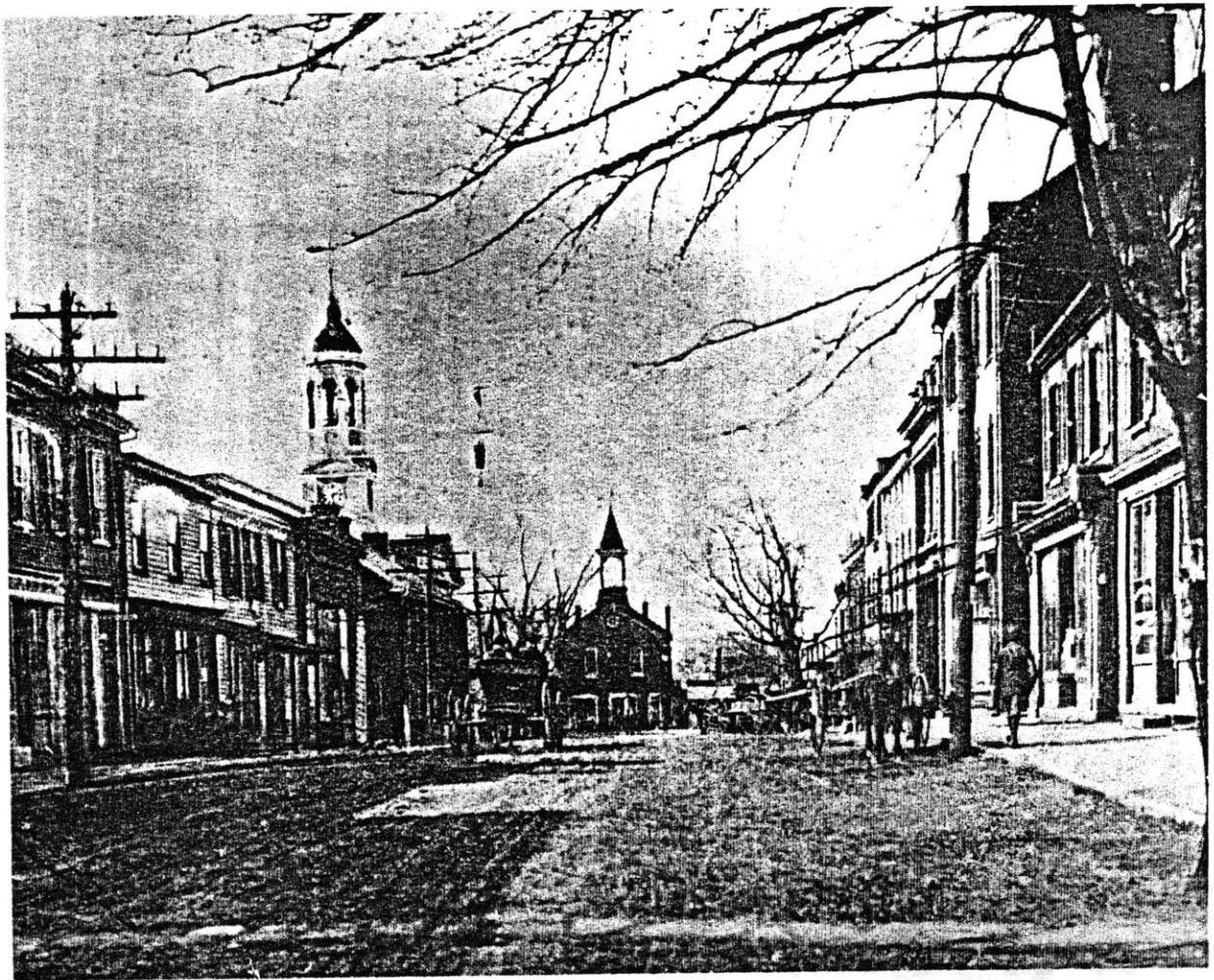
WANTS TO GO ABOARD. 1939. Felix Klee Collection, Berne.



THE TIGHTROPE WALKER. 1923. Klee-Stiftung, Berne.

1.02

1.01



The village seen as a whole or
as a part: What is the transfer of
information? How do we interpret
the structure of spatial
relationships? What relationships
are relevant to the understanding
of a place as we move through it?
Why is the study of vernacular
forms relevant to architectural

1.03 understanding today?

1

INTRODUCTION

This thesis is a personal exploration in the design process. A year ago, I took a class on computers and architecture in which I had the opportunity to experiment on a mini-cad system. The power of this tool in the design process was evident. The means by which to make judgments about the resultant "designs" was not. The development of this tool and its application to the design raised many questions. Where previously design decisions have been made through hours of labor over trace drawings, mechanical systems in the computer allow accelerated mass production of forms and multiple scales and views through which to see a design develop. The acceleration of the process and the instantaneous crossover from idea to hard line drawing are both an advantage and disadvantage. The decision making

Introduction

process required an intermediate theoretical base on which information about the design and the use of references could be juxtaposed to add insights on the qualities of spaces being created. Quality is based on so many factors that are difficult if not impossible to quantify. Quality is found in light, materials, age, as well as the spatial form. In design, quality often comes from the interpretation of a squiggly line or a smudge on a sketch. Computers don't allow that transformation or elaboration unless the hand is involved.

At the same time, I was involved with Maurice Smith's first Form Language class. The class investigated the generation of forms and their use and appearance in the physical world. Observations of forms led to analysis and categorization of their behavior: the interaction of one form with another. That analysis, in turn, was the key to understanding transformation sequences, the manipulation and juxtaposition of forms to alter their behavior and create a sense

of place. This theory, it seemed to me, could provide the intermediate theoretical base necessary to design with computers.

Use of the theory in design requires 1) further investigation about the behavior of forms; 2) the development of a reference library; and 3) exploration of the methodology to translate observations and references into applicable principles. The behavioral theory needs development at many different scales. The computer, with its zooming capabilities, allows us to see the individual decision at one scale and its effects on the whole. As yet, existing methodologies for organizing and interpreting form are only straightforward "kits of parts," insufficient to explain the behavioral relationship between the parts and the whole. We must clarify our attitudes and develop design methodologies that respect existing building forms while providing opportunities for the future.

These ideas are far too broad to be explored in one

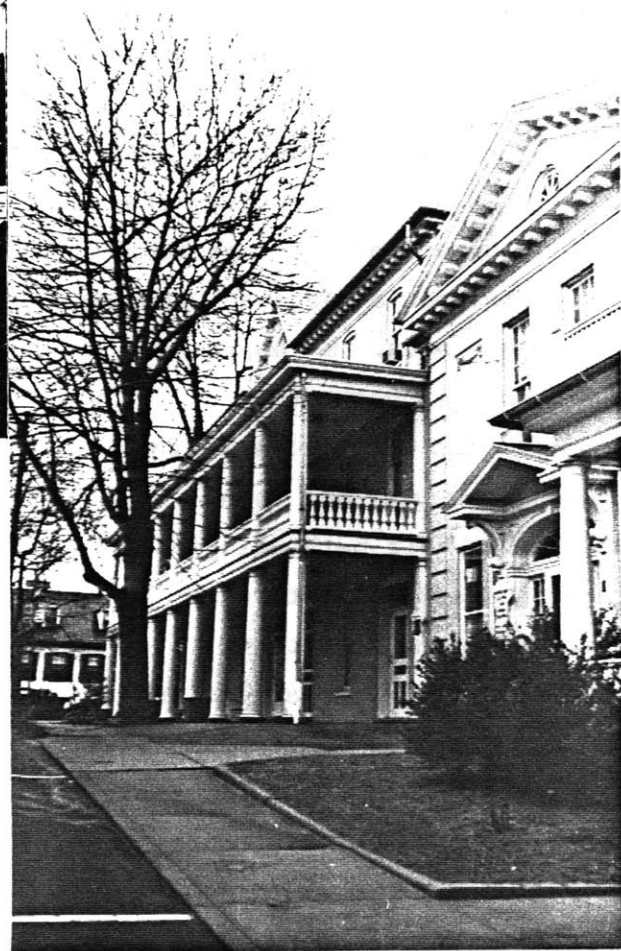
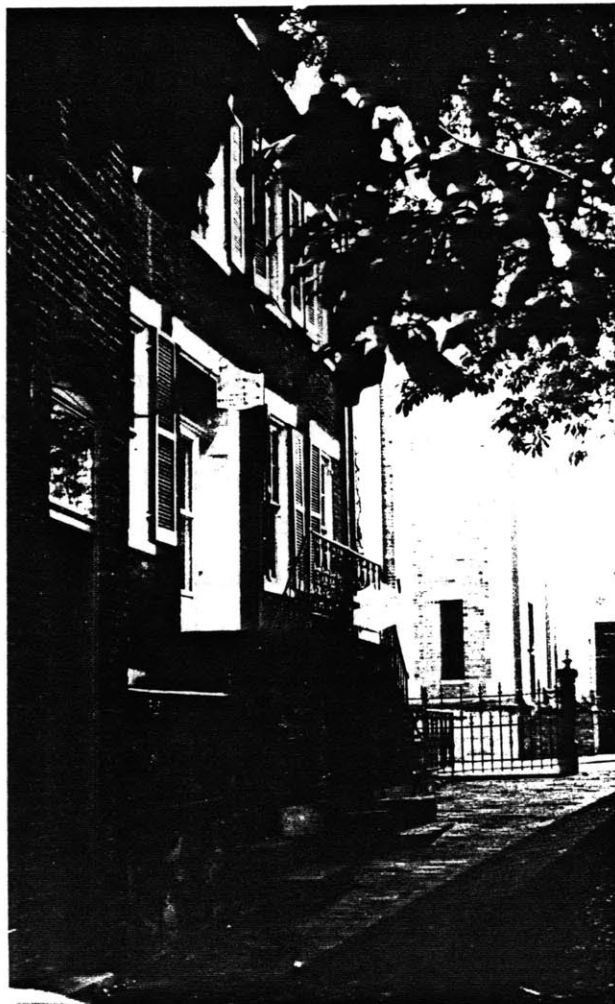
semester even by an army of investigators. With this in mind, I chose to direct this semester's work toward a site specific problem: a mixed-use project in the town of Warrenton, Virginia. The site would stimulate questions to be explored in the methodology and reference search. The design exploration would be used to test the theories and continue the cycle. A further narrowing of the topic led to an investigation of the forms of access which tie the site together. Accordingly, this thesis examines reciprocity--the mutually dependent exchange between territories--as a means of creating paths and places. My approach builds on the observation methodologies of Maurice Smith, Fernando Domeyko, and John Habraken. Their methodologies focus on discovering through observation the structural principles of organizations and then transforming those principles in the design process. The first part of this thesis elaborates the structural principles of passage. I focus on the boundary definition of individual forms and extrapolate

the factors that make the exchange and transition between territories. The first steps develop ways in which to view the behavior of forms, as I have learned through the Form Language class. This is the "Form" chapter.

The interaction of the forms and a user, the observer or designer, brings a place to life. In passage, it is motion which generates the understanding. Therefore, the "Motion" chapter ties the territorial behavior of the forms to the actions of the observer through sequences and parallel exchanges of territories in time and place.

As in any learning process, it is through application, the doing, identification and repetition that clarify concepts. Therefore, the "Parts and the Whole" chapter and the design reinforce those principles. Through these chapters, I search out the interaction of the parts. Chapter Four presents some planning theories, leading to a typology study of passage: room to room, corridor, and field organization. This provides a series of

Introduction



1.04

references of reciprocal forms and their use in creating associations in passage. The associations stimulated by forms and their organization are explored at village and building sizes. Throughout these chapters, the design principles evolved are applied to observations of Warrenton. Chapter Five consolidates these principles in the design.

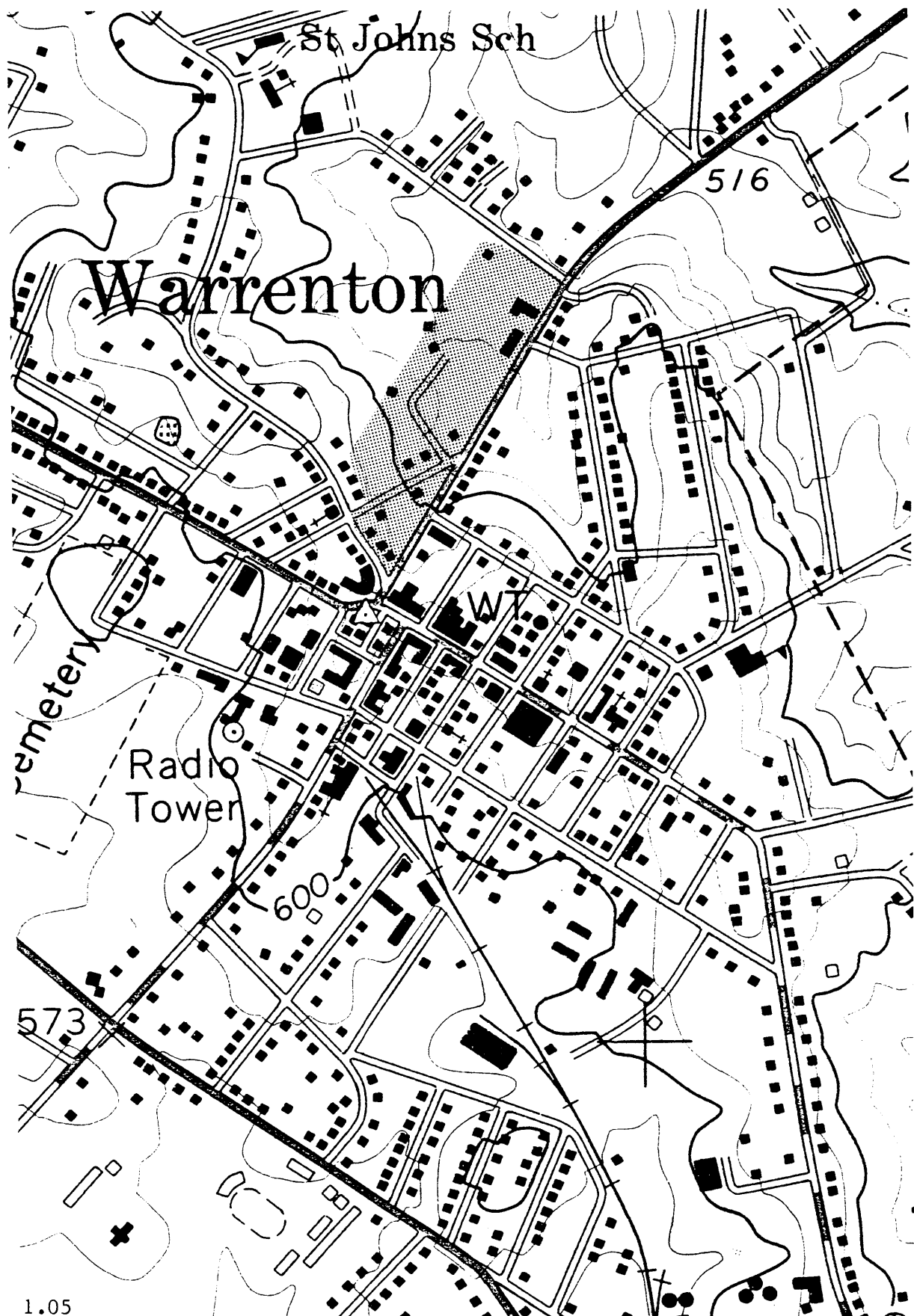
The process is the development of an idea--reciprocity. It is an effort to define a working method which allows for changes and additions over time to a built environment without disrupting the integrity of a place. As in any cycle of growth, decay, and renewal which allows for varying interpretations to be made by individual actors, existing forms must guide and give clues without hindering new interpretations. The use of passages as territorial exchanges is one way to view this process.

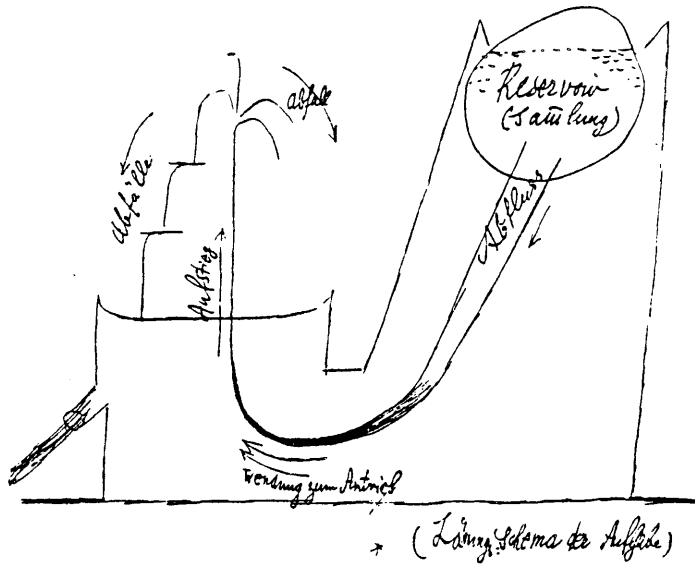
Introduction

A note on Warrenton, Virginia

The town of Warrenton, Virginia has been the stimulus for this study. The program is for a multi-use complex: an extension of an existing library, a museum, a theatre, retail, office, recreation, and connections to housing in an approximately three-block section of vacant land. The program is derived from the functions I felt lacking in the town when I lived there.

My intent is to develop a method for recognition, transformation, and projection of aspects of a built environment which would allow for future development with understanding of context and continuity. Continuity in passage of places and time allows for the growth of a rich environment.





2.01

Instead of saying that the visual world is based on a succession of images, it is possible to say that it is based on a continuous but changing image.

- J.J. Gibson¹

¹The Perception of the Visual World. Cambridge: Riverside Press, 1950. p. 158.

2

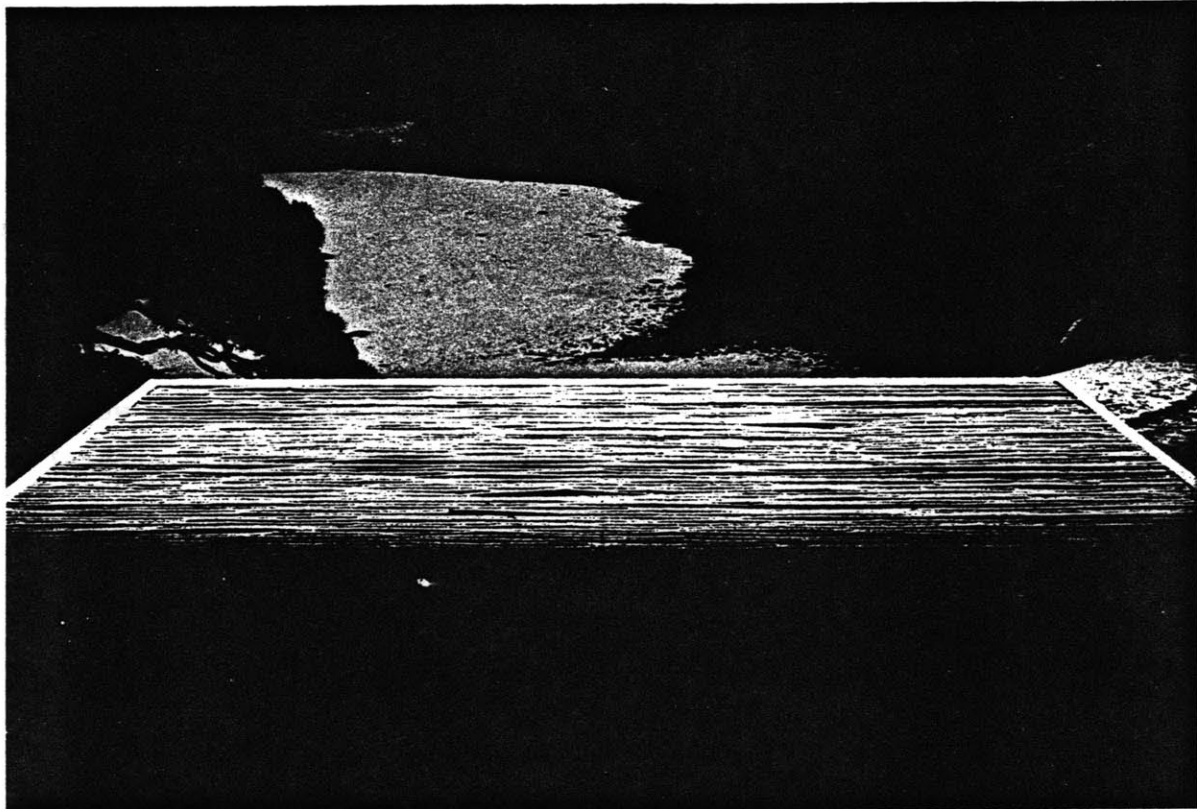
FORM

By understanding the use of forms and the ways in which they are manipulated and deployed, we gain understanding of architectural ways in which to enrich, enhance and interpret our environment.

The first part of this chapter examines the implications of the form and its perceived territory. It establishes the parameters for the observation of the individual territorial form and examines the reference frame from which we base our observations. Registration, displacement, motion, stability and extension are explored as basic concepts with which to describe the interaction of one territory with another.

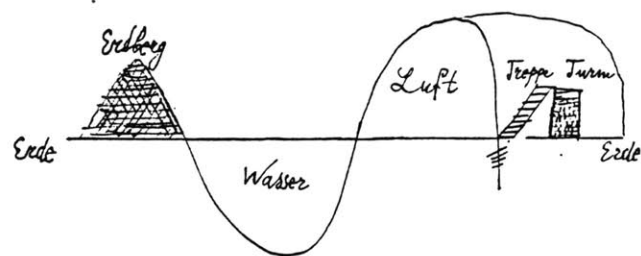
The second part of the chapter explores the definition of territorial forms as they exist in Warrenton. Public space is examined through the transformation of the porch form and through the control of larger public buildings.

Form



2.02

Earth, Water, and Air



Earth mountain water air staircase and tower

2.03

Reference frames, registration and displacement

Passages are routes through which we move to gain understanding of our environment. They must stimulate and invite. Associations to reference levels aid in defining our perceptions. Continuity provides the reference frame from which we gauge or judge the differences and transitions in our environment. Continuity is the continuity of use, the aggregation of similar forms and associative definition of size or time. Discontinuous forms which we pass in motion through the space work with the continuities to define the territories of passage.

Passage along a street or outdoor space is marked by its continuity: the permanence of the ground and water surfaces. Horizontal forms extend spatial continuity. Exemplifying this, the moonviewing platform extends the view into space along a horizontal surface. This form often parallels a pond or water surface which is associated with it through proxim-

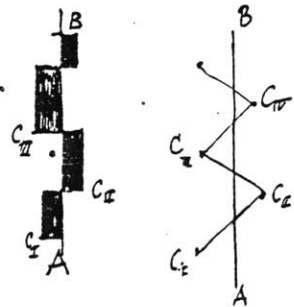
ity. It is the built territory where the observer is both inside the territory of the building but also in the landscape. The strength of the exchange is built through the associations with water.

The overlapping form of the waves and the shore serve as a reference line by which we gauge our perceptions of movement along the edge. Footsteps filling with water tell us of the level of the surface of the water and of our intrusion into that realm. The displacement of the surface of the water is only possible within a given territory: the demarcation of the water level. At a shoreline, the overlapping zones of water and land are merged in a way that neither has dominance over the other. The reciprocal relationship between the two creates a passage in which associations are possible with both forms. Inside and outside are merged.

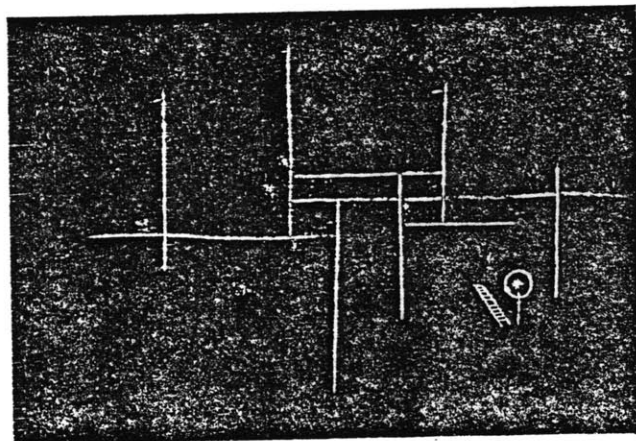
The water's edge provides a territorial reference frame. This zone associates with land and water and may be wide or narrow depending on the slope of the land form. It

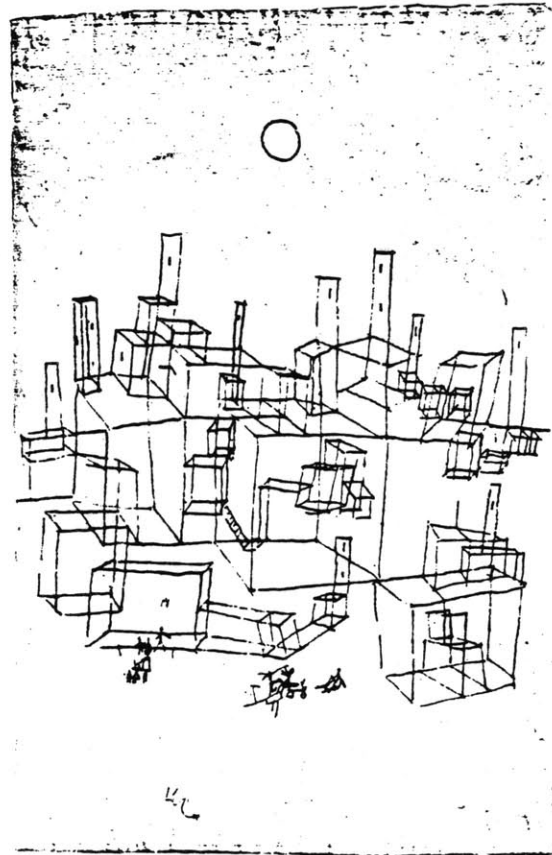


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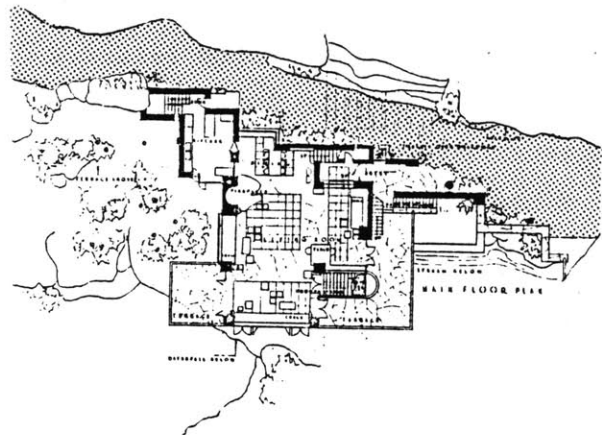
2.05





TOWN WITH WATCHTOWERS. 1929. Klee-Stiftung, Berne.

provides a place for the reciprocal exchange. Forms, displaced from this, register off the zone. Just as the footsteps in the sand displace the form of the surface continuity, buildings or stones which inhabit the edge may register or move away from the reference frame. The reference frame may itself displace from larger associations and build or multiply the associative understanding of a place. These principles are demonstrated in the photographs of habitations.



2.06

Form

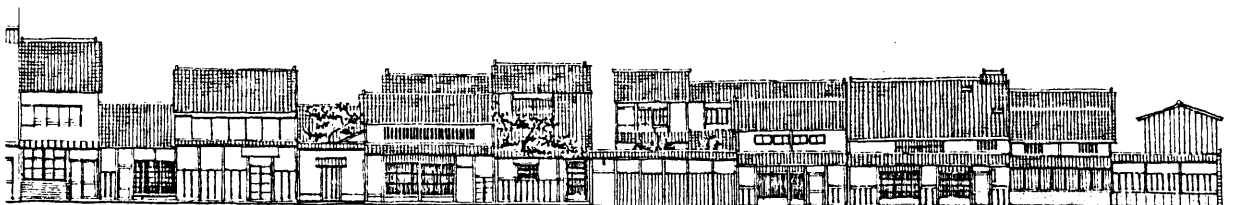
The ways in which the forms are organized directly affect the ways in which they transfer the spatial image. The transfer occurs through forces which are a part of the element and the field in which it exists. To understand the organization of relationships, one must first recognize a framework or pattern within the part that stimulates the first interaction. Movement along the part develops an understanding of the whole through association with other parts. This sets up a single understanding of the space within a zone. The definition of the built environment must be strong enough to enable the observer to relate it to later reference frames.

A single zone may carry a range of associative forms. The positioning of these forms relative to the territory is "registration." Registration is a reference system of direction and size. Horizontal examples of registration may be

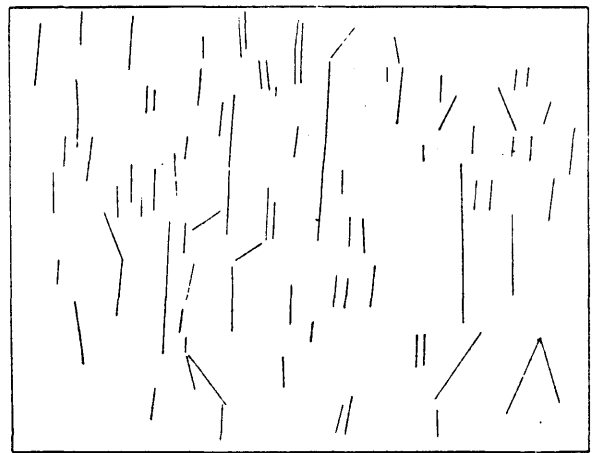
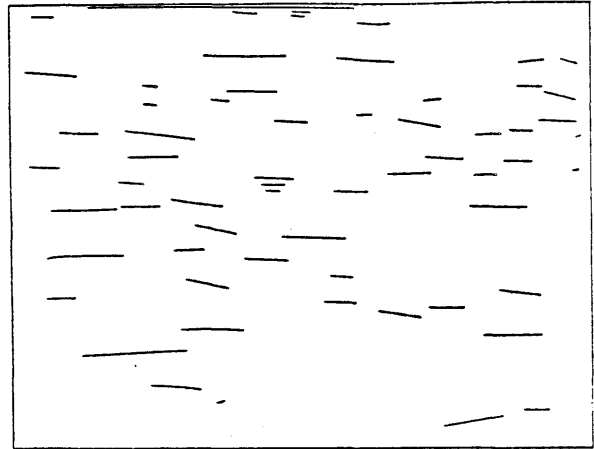
seen in the patterning of windows and screens along a Japanese street. The vertical registration creates the sensation of stopping and boundary. As in the Klee example, the combination of the two directions creates the greater perception of spatial sequences.

If the ground or horizontal forms define the zones of continuity, variation occurs in the elements that cross those zones or define territorial control by virtue of their height. Vertical forms add definition to spatial territories and create the spatial forms that one moves towards or leaves behind in passage. We experience the patterns of crossings, the buildings, the recurring elements of fences, hedges, storefronts. Changing forms are the events that define or characterize particular places.

Klee's linear example of houses in a landscape shows the two



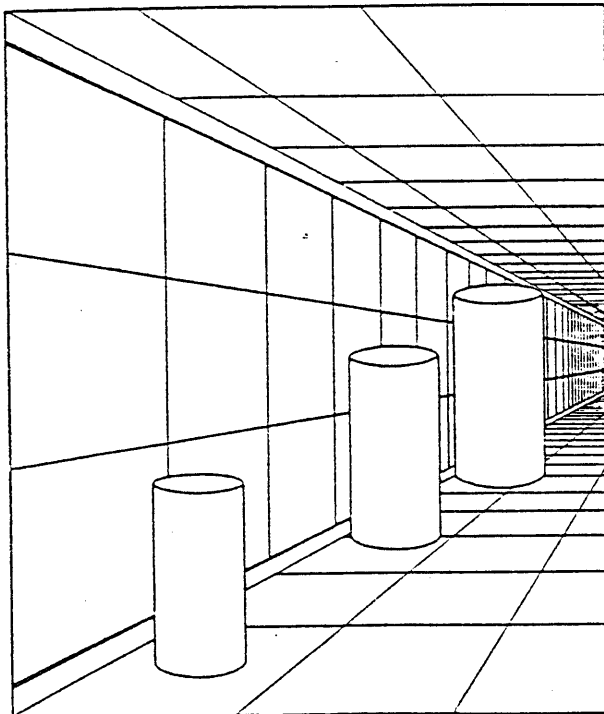
dimensional views to be composed of fields of horizontals and fields of verticals. Together they form a "static-dynamic synthesis." In passage, we associate with horizontals or verticals as spatial forms which relate to use through their edge definitions. In the drawing, the simultaneous front views and profiles of Klee's houses and landscape project through both space and time. As observers in the landscape, we experience a sequential or continuous and changing view of spatial relationships.



2.08

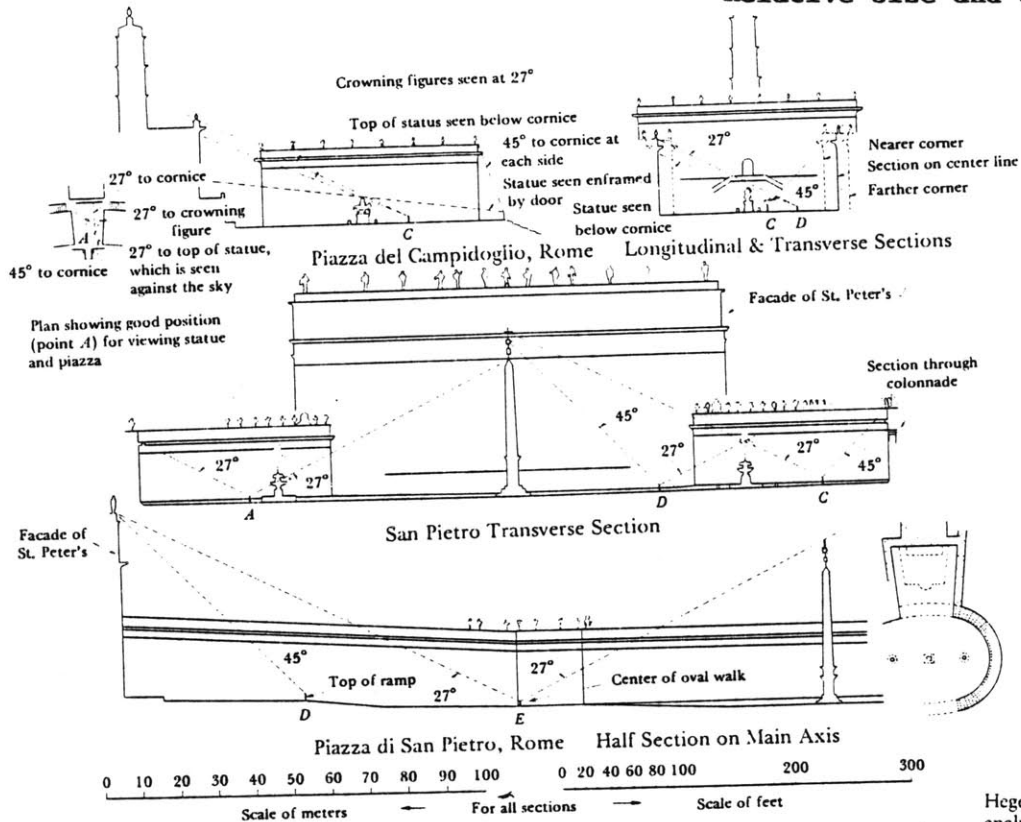


2.07



2.09

Relative size and association



Hegemann and Peets's
analysis of a Renaissance
piazza

2.10

Relative size and association

The associative range through which we experience passage may be built up of our understanding of objects within the field and their proximity in relation to their size. Hegelman and Peet's analysis of a Renaissance Piazza demonstrates how our perception of the size relationship and association to the building and ornament is affected by the viewing angle. Within the range of 30 or 45 degrees, one would feel the presence of the building and the monuments located on them.

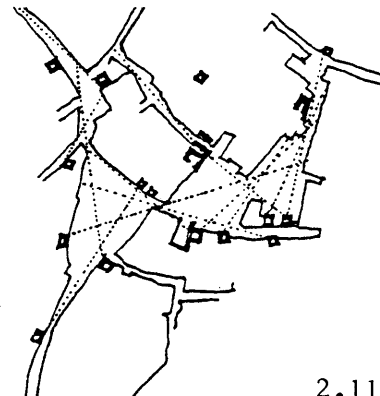
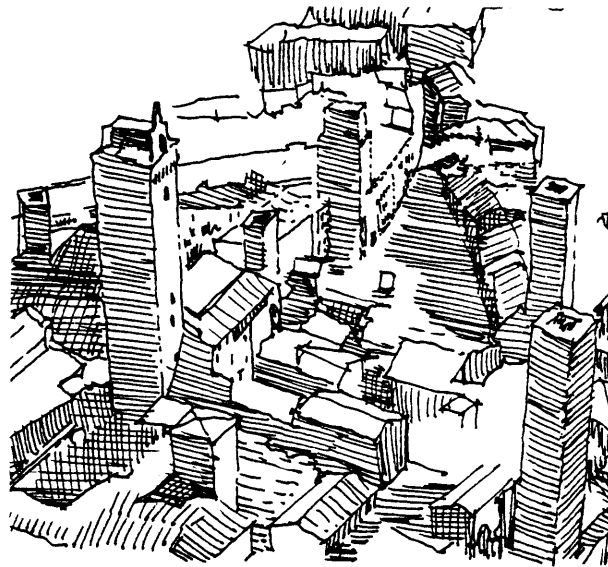
Higuchi, in the **Visual and Spatial Structure of Landscapes**, found the size relationship and angle of elevation for pilgrimage temple sites to be between 20 and 40 degrees. This forced the pilgrim to climb stairs. The manipulation of the approach reinforces the presence of the shrine at the start of the ascent. The passage to the shrine is part of the event.

A world that incorporates a reciprocal relationship between the observer and close and distant forms would require that certain elements project within the 30 - 40

Form

degree range of vision from both realms ("here" and "there") simultaneously.² The presence of both elements participate in the territorial control of a space. Towers, spires, and other large forms projecting above buildings have served these roles and function as orienting devices in the landscape.

The towers within the town of San Gimignano set up such a relationship. The positions of the towers in relation to each other and in relation to openings and intersections of streets set up a system that is readable as an organization principle within the town. Movement is understood both by orientation to the buildings in proximity but also to the associative larger forms of the towers.



²For further discussion of the presence of objects "here" and "there" see Gordon Cullen, **The Concise Townscape**. New York: Van Nostrand Reinhold, 1961.

In Chapter Five I explore the use of larger singular forms and their associations with passage in the site study for Warrenton.

Objects may act as markers and provide associations through their perceived presence from differing locations. They are viewed against the ongoing and continuous reference frame. Our experience of the reference frame, the route through which we move, is variable through the height and width of the passage and through the articulation of the edge zone. Variations in the height and width may alter the amount of light received in the street, for example, making tight, tall passages sheltering or oppressive. They may provide no associative context when the building forms are spread so far apart as to generate no territorial control.³

The following sections examine through examples territorial control of forms to generate paths and places.

³See Kevin Lynch and Gary Hack, **Site Planning** (3d ed.) Cambridge: MIT Press, 1984; Tadahiko Higuchi, **The Visual and Spatial Structure of Landscapes**. Cambridge: MIT Press, 1983.

Form

Motion and stability

When we speak of passage as a reciprocal exchange between territories, we must note what territories mean... Why speak of territories and not objects or the building form, the traditional foci of design? We listen for, but cannot hear, the sound of one hand clapping. Similarly, the object alone cannot build space. The dynamic relationship between forms and between forms and the observer build space.

Each form has an extension of its projected image in space. This is the bounds of its territorial control.

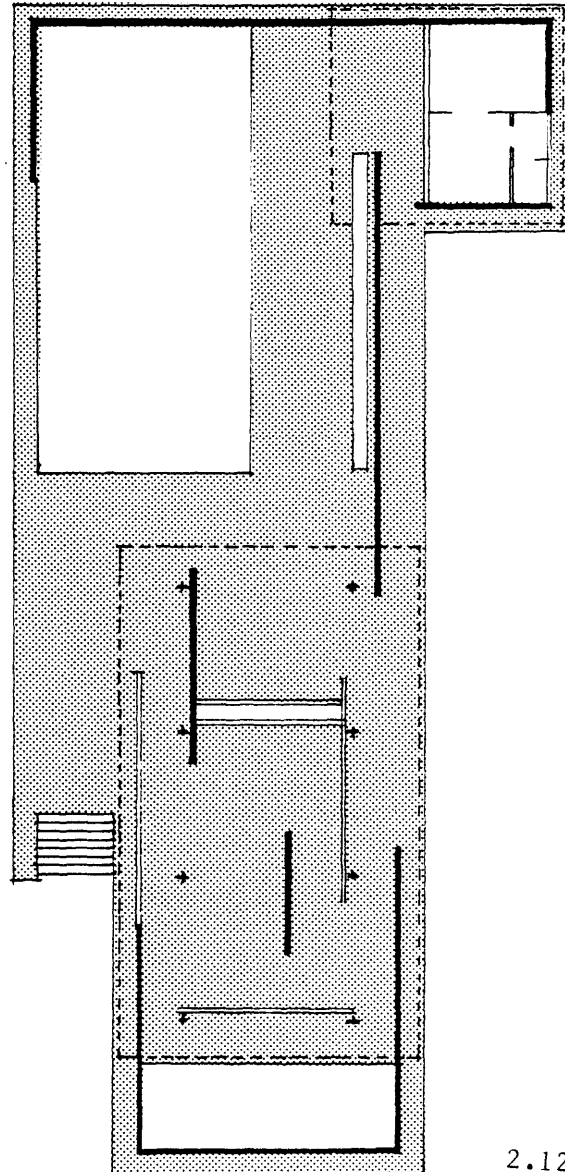
The Renaissance object and perfect image of the building evolved along principles of symmetry and axial movement systems. The building form defined the stopping place and the proportions of the square and the circle were used to demonstrate the stability of the built object. The Pantheon, St. Peter's and the Tempietto are all fine examples of these forms. By virtue of their

completed form and perfect geometries, these examples build internal places without association to continuity or the path. The projected definition of these buildings is a single linear zone leading to and away from the entry. They stand as complete objects within a field and may be used as recognizable markers. They contribute to the sense of space by their dissociative formal structure. Some modern architecture too readily adopts these formal principles without consideration of their dissociative qualities. One cannot build an associative world with dissociative forms.

By breaking down the symmetry of the single form of a building into associative zones, the static nature of the building form dissolves. This produces an environment that exhibits a dynamic exchange between inside and out. In viewing the modern form of the built exchange of territories, the objectified image of the building recedes in importance to the relationship between the space and the enclosure forms. Motion and the continuous associations with

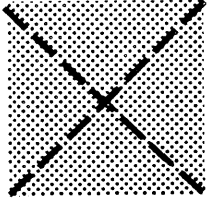
ongoing space require the juxtaposition of multiple territories. The exchange between those territories to build an associative understanding of the whole is projected as a means to understanding the built environment. The form of the architectural response to those formal principles was seen in the Barcelona Pavillion by Mies van der Rohe.

In viewing the exchange of territories, the emphasis is placed on the definition of movement and the counter to that--the stability. The walls exhibit territorial control in a systematic way that incorporates both motion and stopping. The following diagrams and images relate the stable form and the building of that form into the continuity of the landscape.



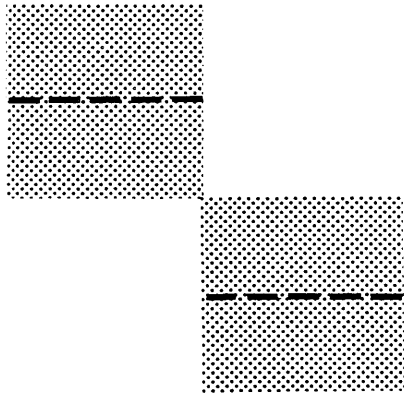
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Form

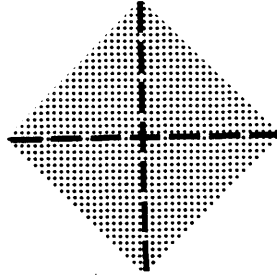
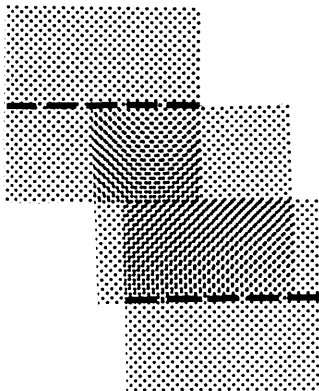


The static view of form.

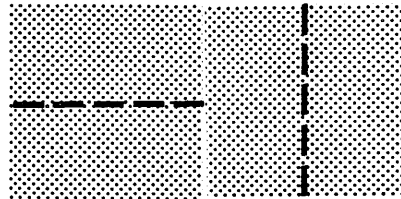
The diagonal defines the territory.



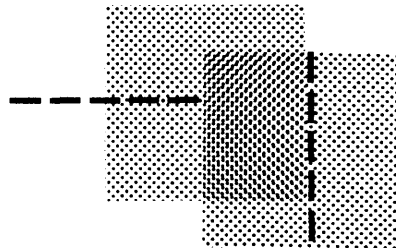
Generate the diagonal through steps within space.



The diagonal also projects movement.

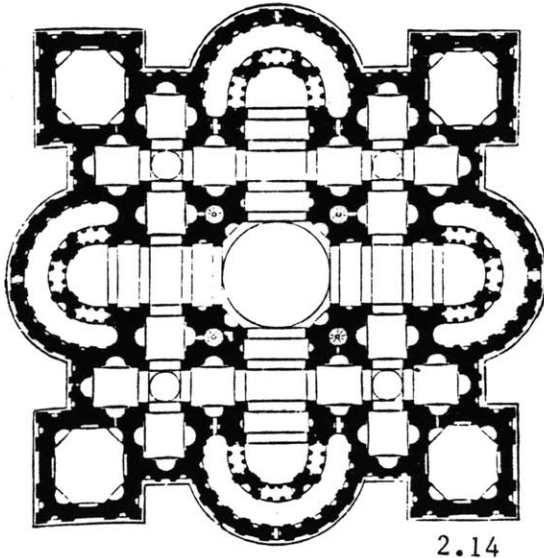


Stopping and motion juxtaposed.



Space moves between the demarcations.

Shared exchanges.

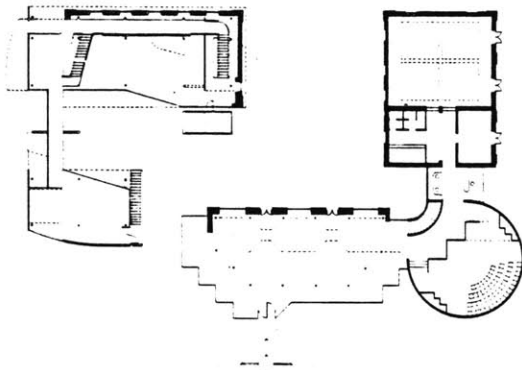


Built and unbuilt exchanges of
motion and stopping.

Repetitions of dimensions set up
an associative relationship.

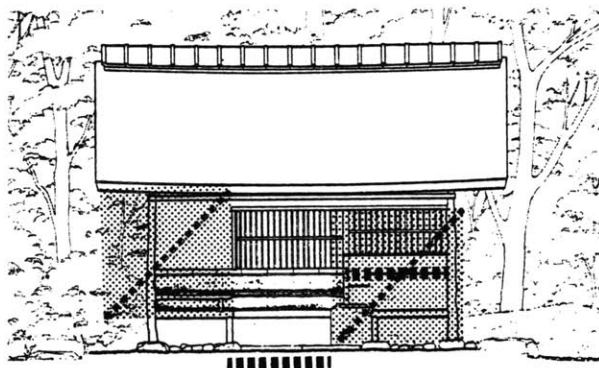


2.15



2.16

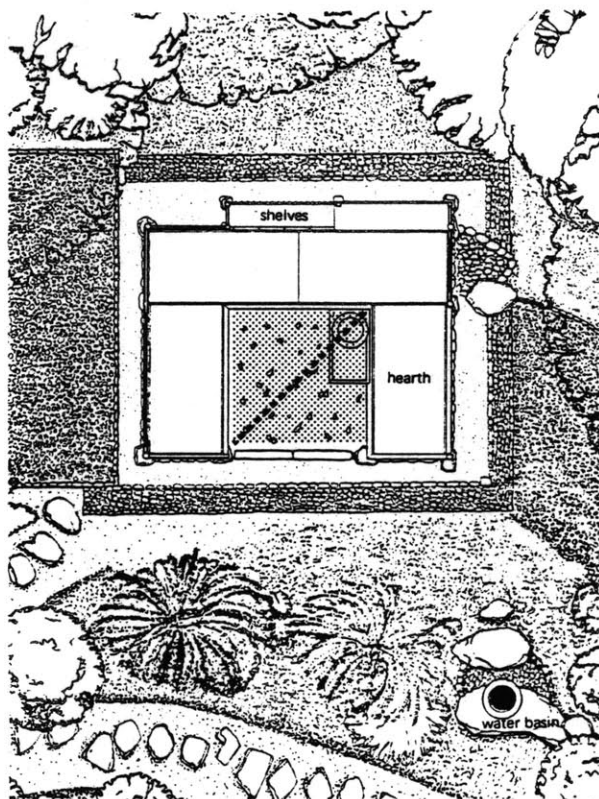
The addition of the parts is
greater than one whole because it
creates associations with the
ongoing space through extensions of
boundary definitions.



2.17

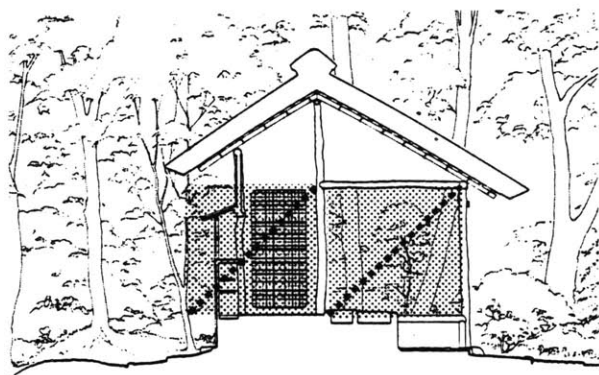
Shoka-tei,
Katsura Palace,
Kyoto.

The square as an abstract element is a stable form. Its territory is defined by the diagonals and sides of equal dimension. Throughout architectural history, the square has served as an abstraction of the stopping place. This tea house perched on a garden hill in the Katsura palace grounds is also constructed from the territory of a square. The house is representative of stopping places along mountain paths. Yet it maintains associations with the landscape by projection of its territories through spatial extensions and dimensional repetition.

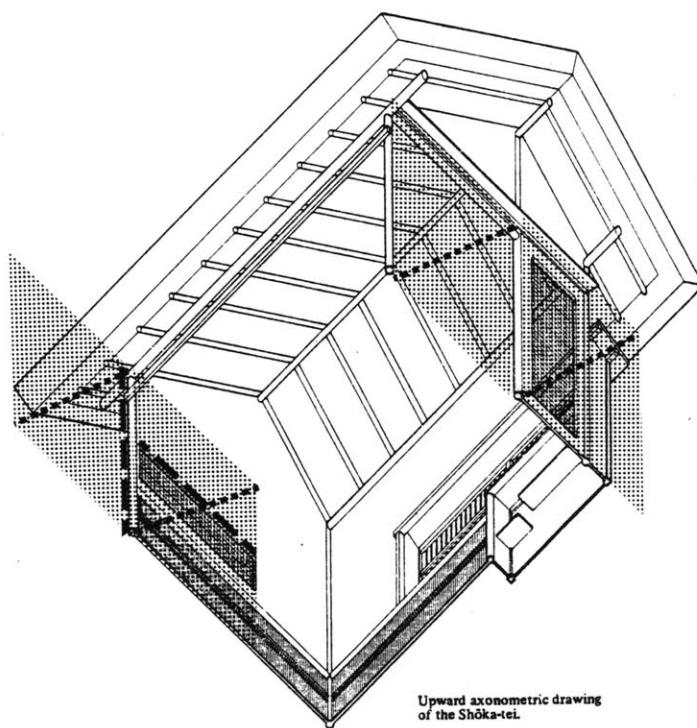


2.18

In section views, the territorial control of the square or dimensions defined by it often extend beyond the physical definition of the building. The reciprocal exchange of space and built forms creates a building that contributes both to the definition of the path as well as to the act of stopping.



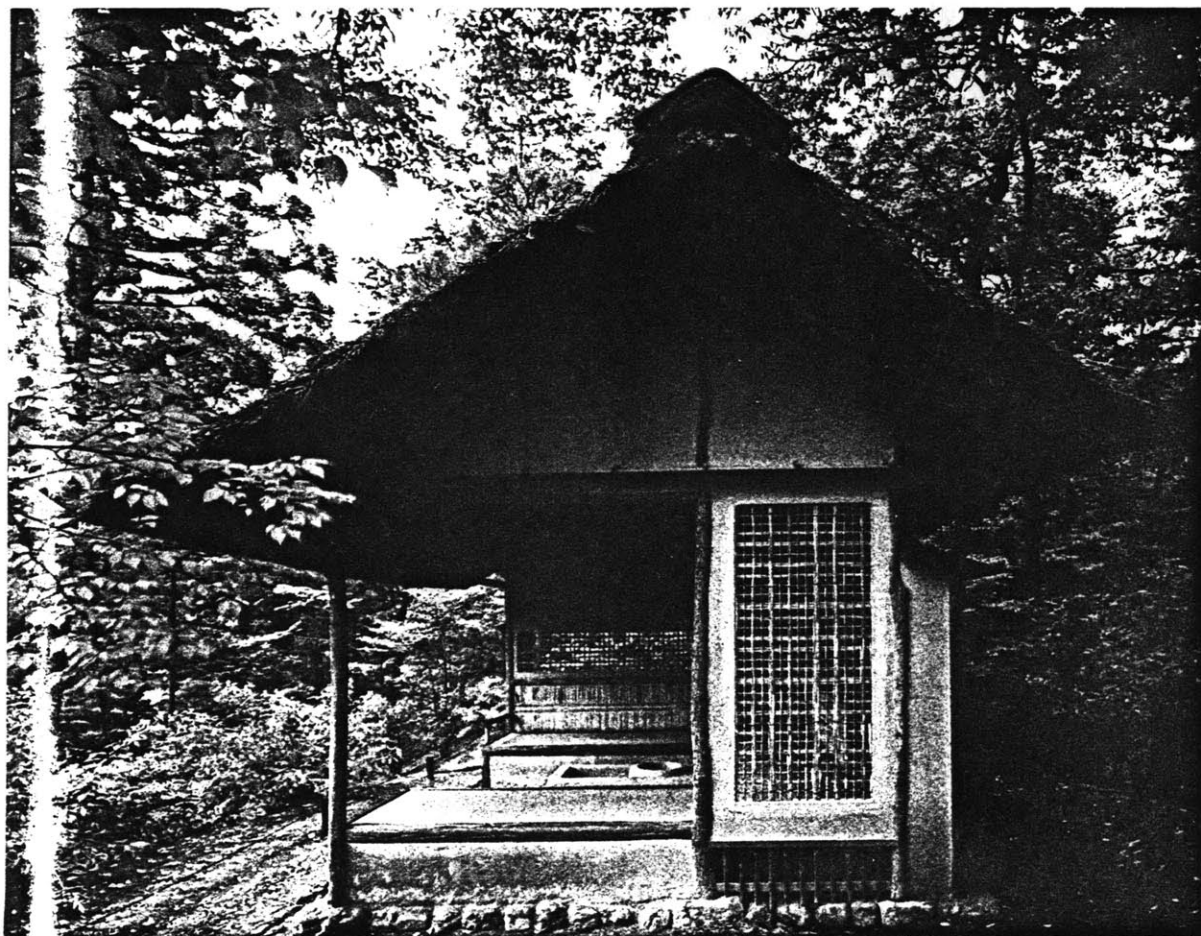
2.19



Upward axonometric drawing
of the Shōka-tei.

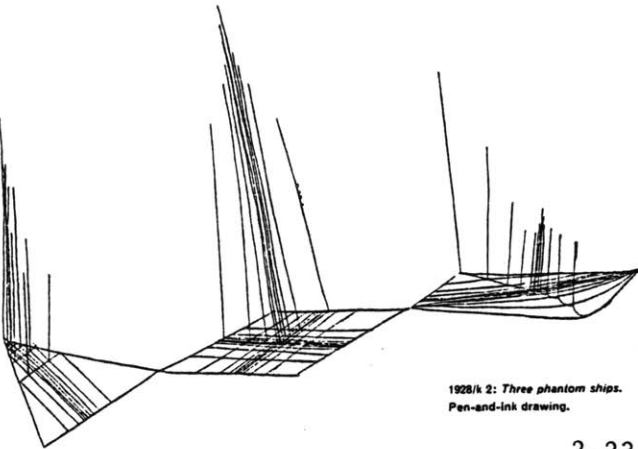
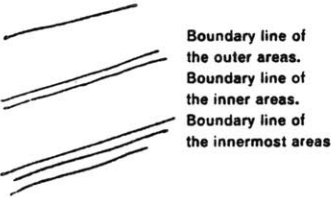
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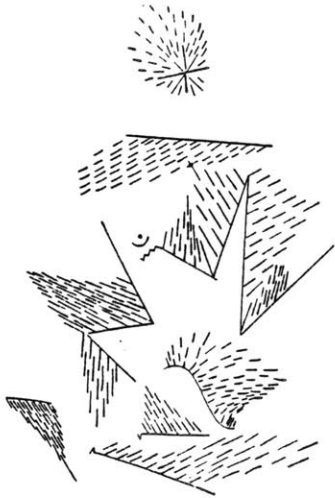
Form

Boundaries of different value for inside and outside

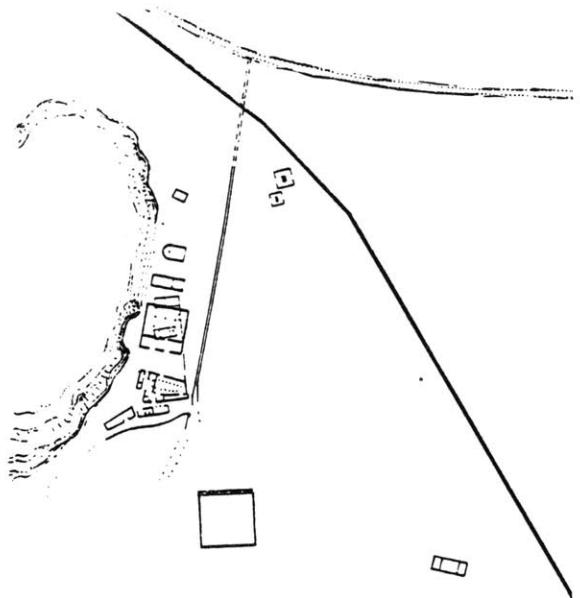


1928/k 2: Three phantom ships.
Pen-and-ink drawing.

2.23

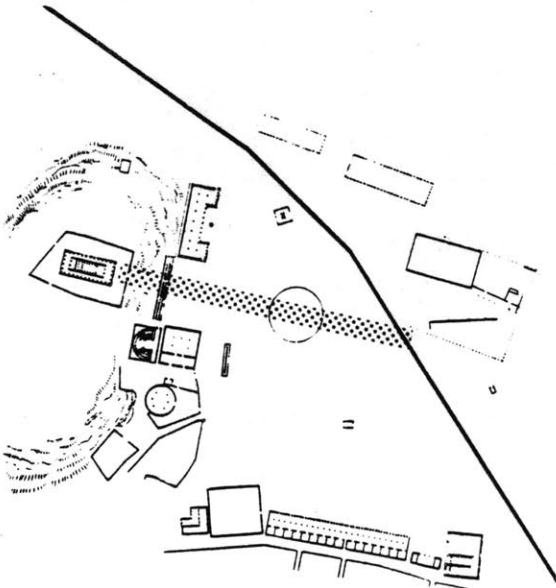


2.22



2.24

500 B.C.



2.25

420 B.C.

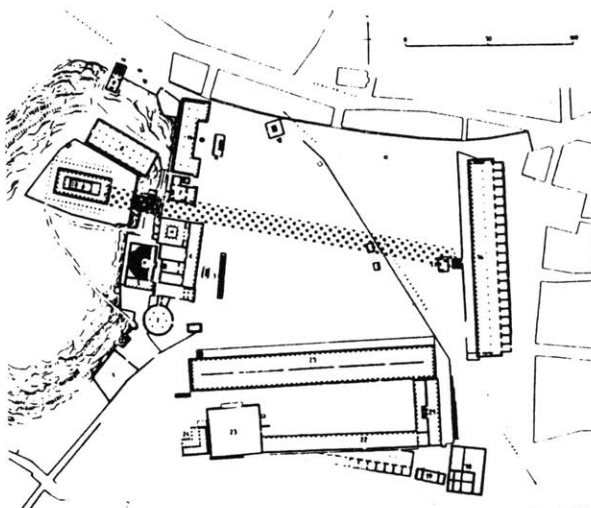
Hephaisteion Built.

**Territorial control
Boundary definition**

Territorial extension

Paul Klee, in **The Thinking Eye: Notebooks on Formal Thinking**, expresses the nature of the boundaries of objects. Objects are viewed not as solid forms but as territories with varying degrees of differentiation at their "edges." Beyond those boundaries they possess the power to deflect, encourage, or contain motion. Architectural form should build on these interpretations.

The degree of territorial control would depend on the public or private nature of the intended use of the space.



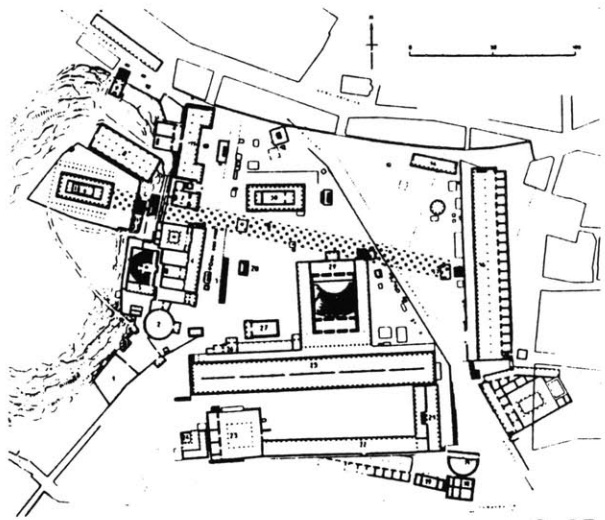
2.26

Hellenistic period

The building of the Hephaisteion on the Athens agora displays the power of one strong element to act as the organizing element in the development of a space over time.

The territorial control of this building over the agora preserves the form of passage through and between the buildings as they are erected, but also aids the definition of the landscape in the orientation of the Appian Way which passes diagonally through the space.⁴

⁴Edmund N. Bacon, **Design of Cities**. New York: Penguin, 1976.



2.27

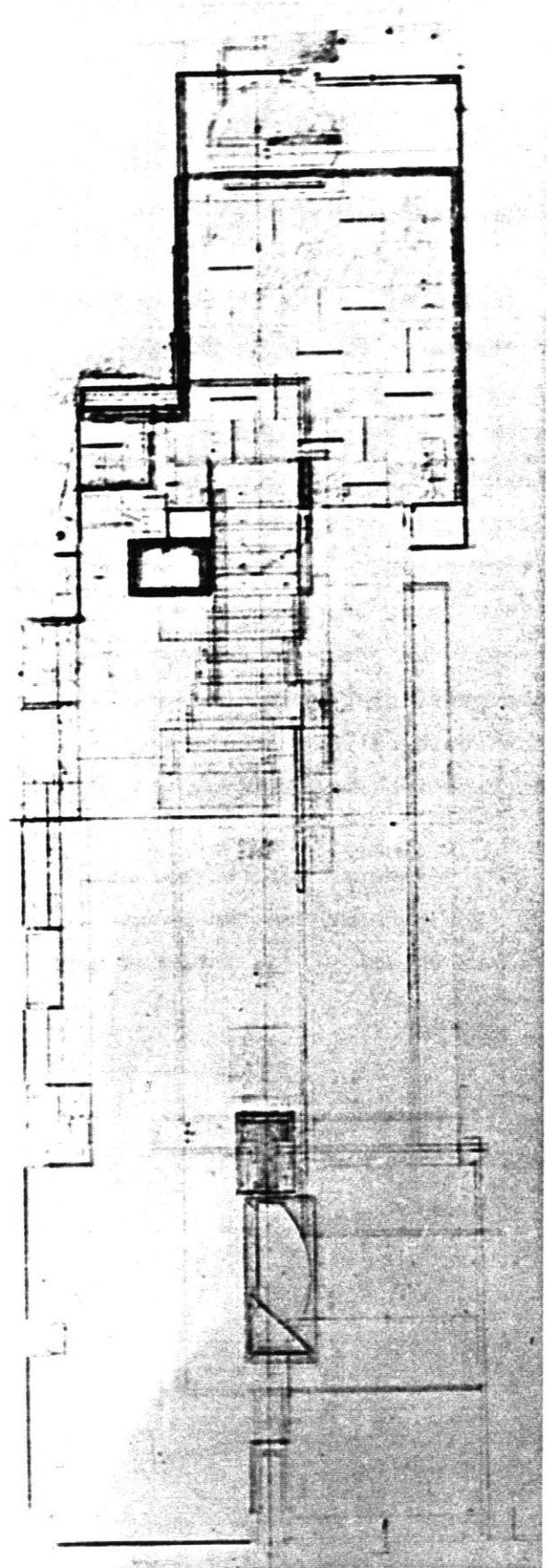
2nd c. A.D.

Form

Olivetti Showroom

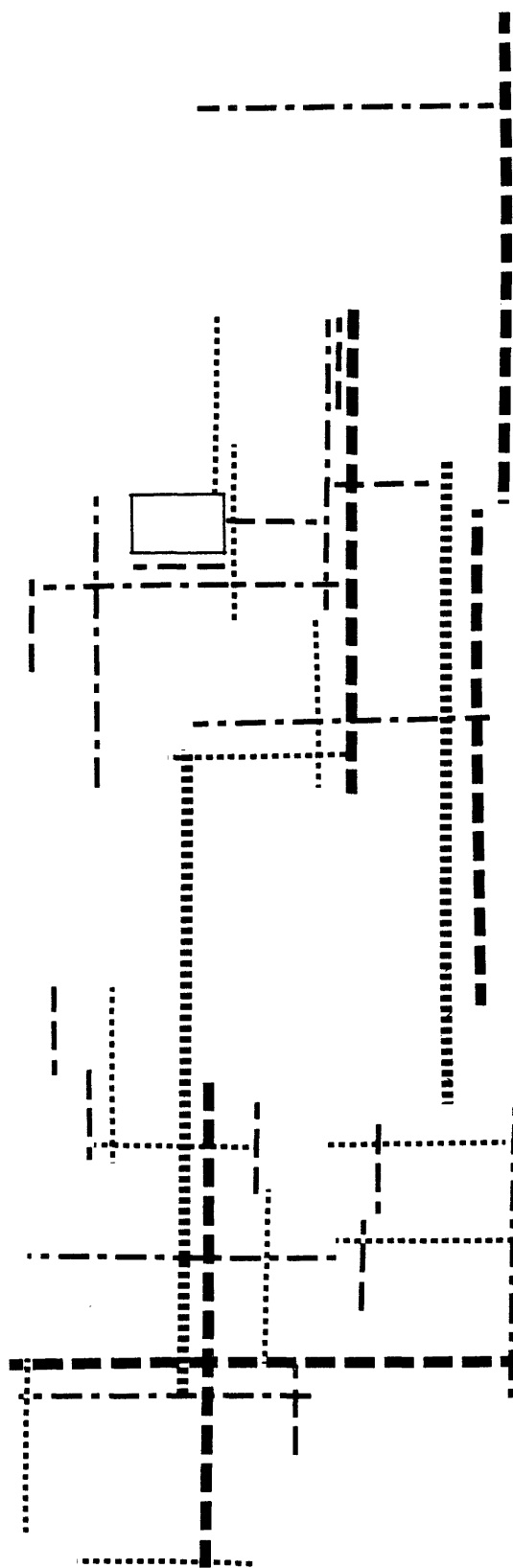
The Olivetti Showroom by Carlo Scarpa in Piazza San Marco, Venice, demonstrates the integration of continuity and the exchange of territories within the interior of one room within the urban tissue.

This space is designed in three parallel zones which exchange territorial definitions through overlapping and repeating dimensional continuities.



2.28

Additive continuity
Olivetti Showroom



2.29

Form

Warrenton

In speaking of exchange, the direct acknowledgement of passage takes place at the point of entry between territories. The threshold and the area of exchange between inside and outside is a forum for this discussion. The reciprocity established through the form of the ground plane and the floor or ceiling are elements of the built form which make the connection between inside and out.

In the vernacular language of Warrenton, the form of the exchange and passage between inside and outside has been the form of the veranda. This room, on the front of a home, is used as a space for communication between the inside, more private room and the outside, the public space in the street. The street has always been the form of motion with little territory given over to stopping. The use of the territories at the street edge was greater before the advent of the automobile. Yet even today the first addition made to many modern houses will be a porch. This is strongest in areas where the sense

of community with the street is greatest.

In traditional building practices in Warrenton, a veranda or porch ranges from six to eight feet in width. These porches were extensions or rooms of the house within the public zone of the street and the front yard. Up until the building phase of the past 20 years, almost all the houses had porches built onto the front and back. They were seen as the area where one sits to converse with passers-by. Associations are on the pedestrian level.

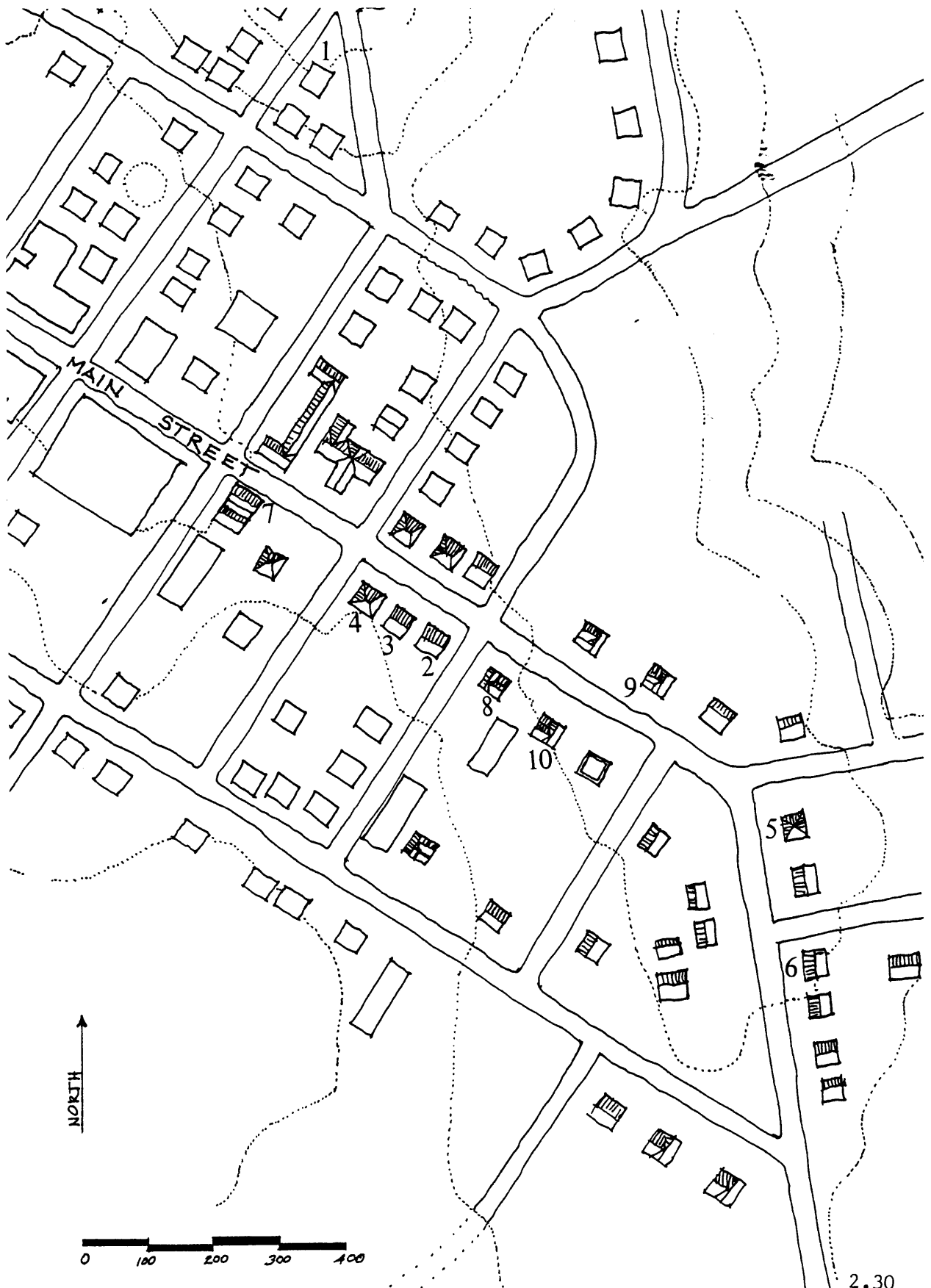
The zone between the porch and the street and sidewalk may vary from 0 to 30 feet or more. These space are outside rooms. Habitation occurs inside and out, thereby acknowledging the existence of territories on both sides of the wall. The extension of the wood floor which is inside the house moves to the outside.

Definition of the form of the porch is strengthened by the contrast to the closure wall in other parts of the house. The form is usually a continuous surface with pierced openings for windows.

Shutters intensify the boundaries of these windows. The porch alone creates a room and projection to the exterior. The contrast of light in the street and shadow on the porch further intensifies the definition of place.

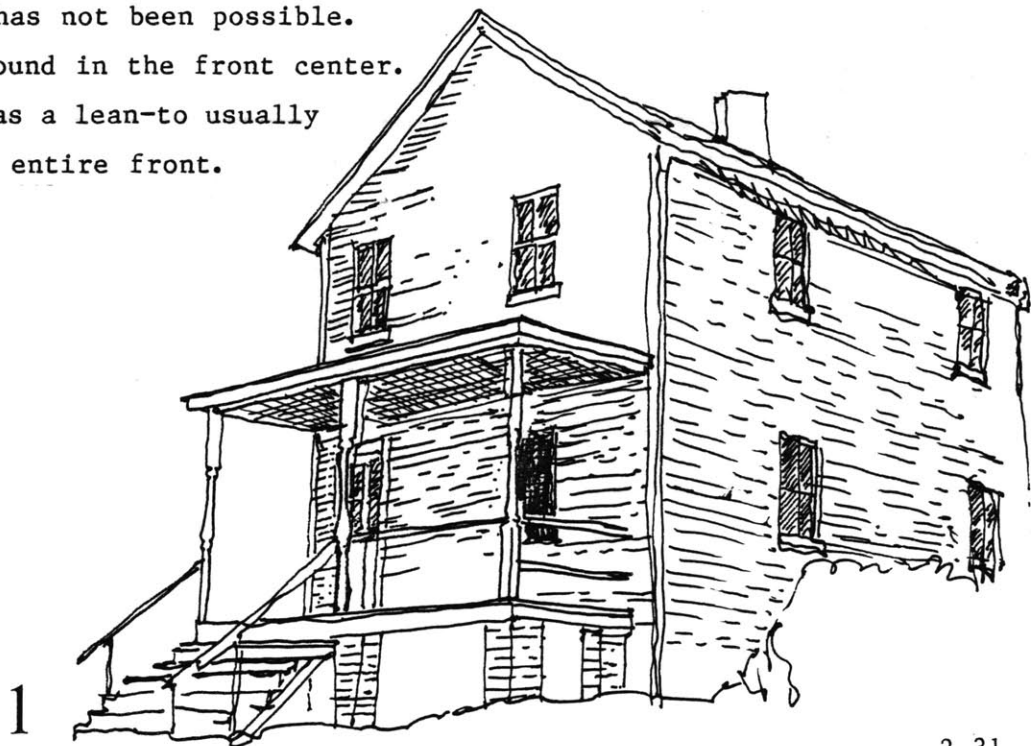
On the level of the individual unit, the form of these porches provides the zone of transition between the street and the house. On the level of the street, repetition of the forms combines to lend association within a spatial system, tying together the rhythms of passage through the town.

The vocabulary of Warrenton's houses and their interaction with the street are seen in two forms: the continuous surface and the framework for the porch. With these elements, there are predominant typologies as demonstrated in the diagrams and photographs.



2.30

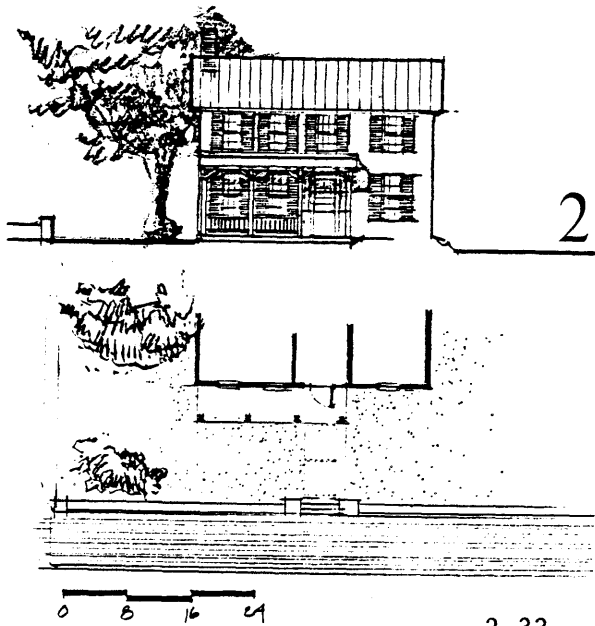
1. The first type is found on deep, narrow lots where lateral expansion has not been possible. Entry is found in the front center. The porch as a lean-to usually covers the entire front.



2.31



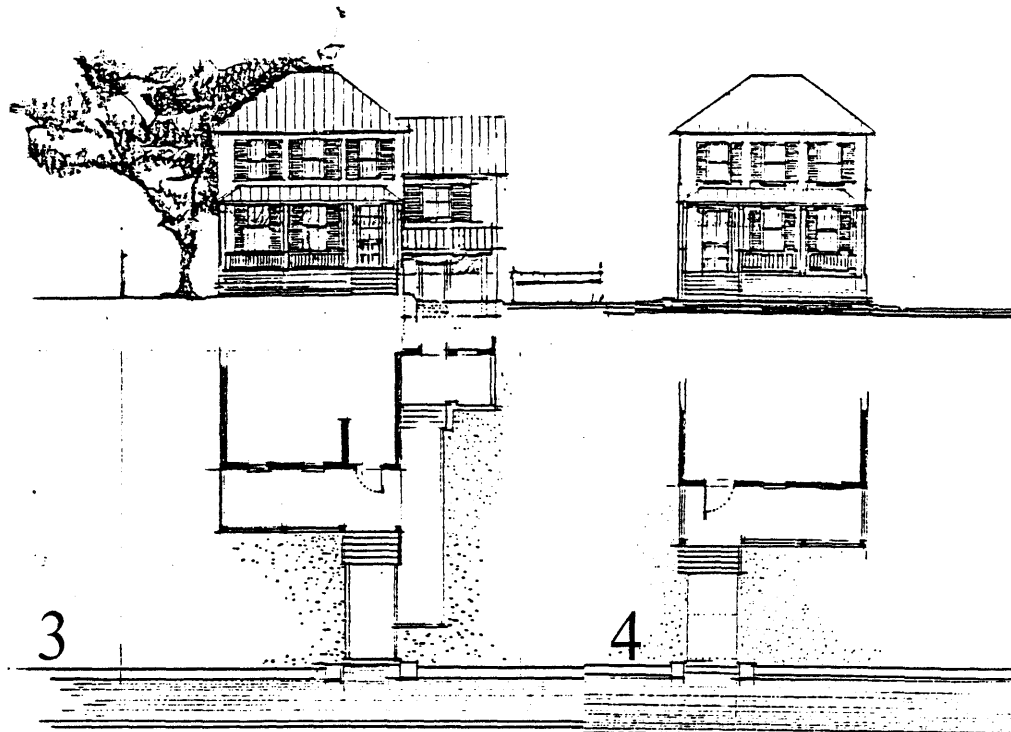
2.32



2

2. The second type has more variations of entry location. Most examples have entries to one side, not directly on center. The evolution of these houses indicates that they have usually been added to in order to achieve the width of the frontage. Where these additions have not been designed congruent with the older part, variation may be found between the left and right sides.

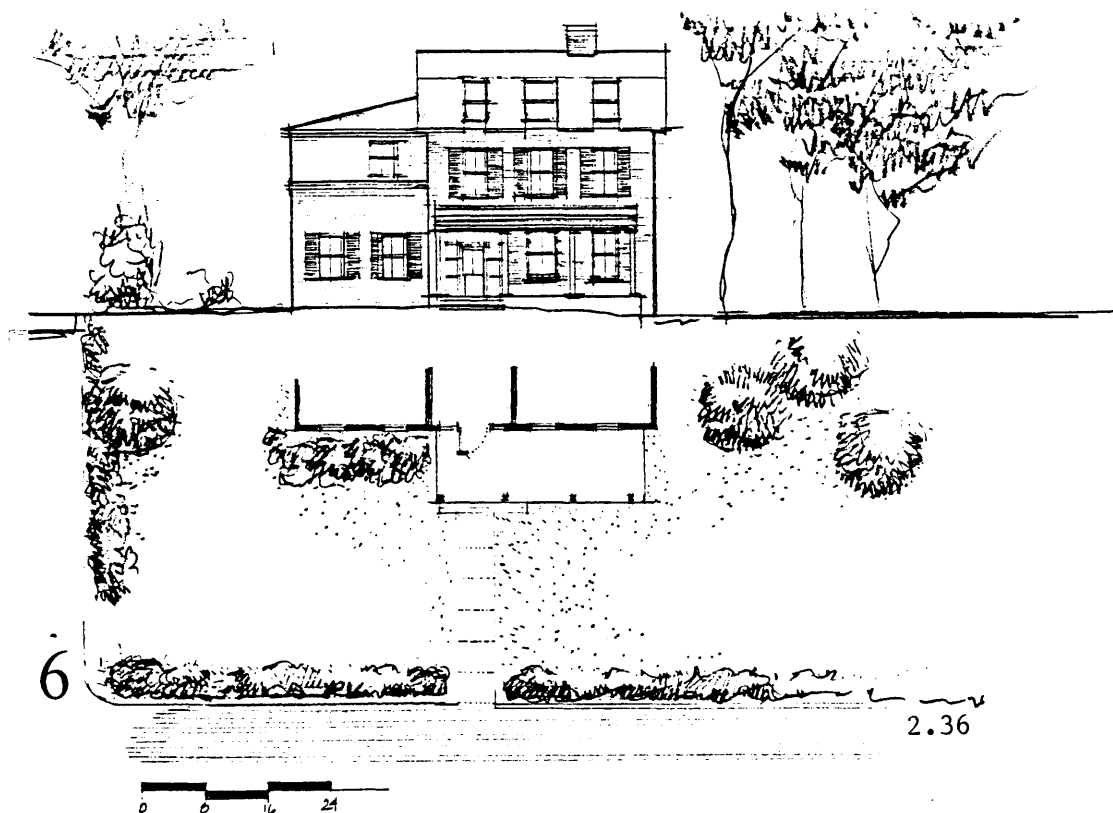
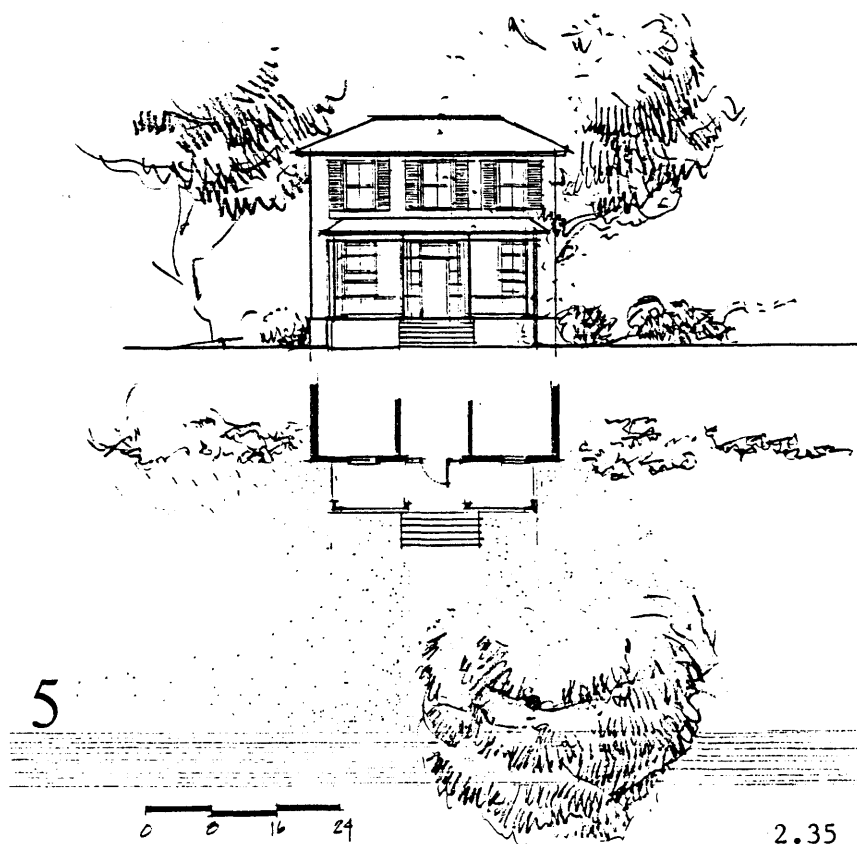
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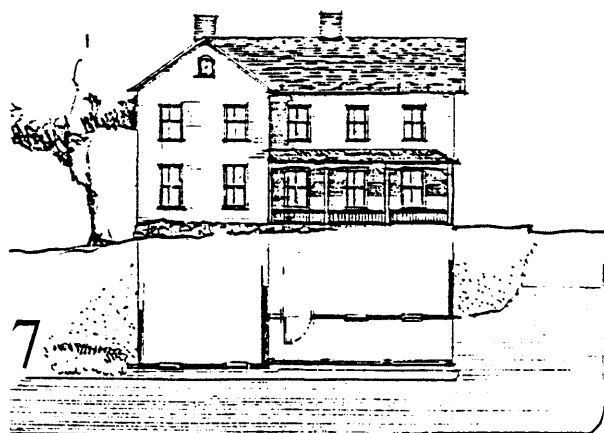


3

4

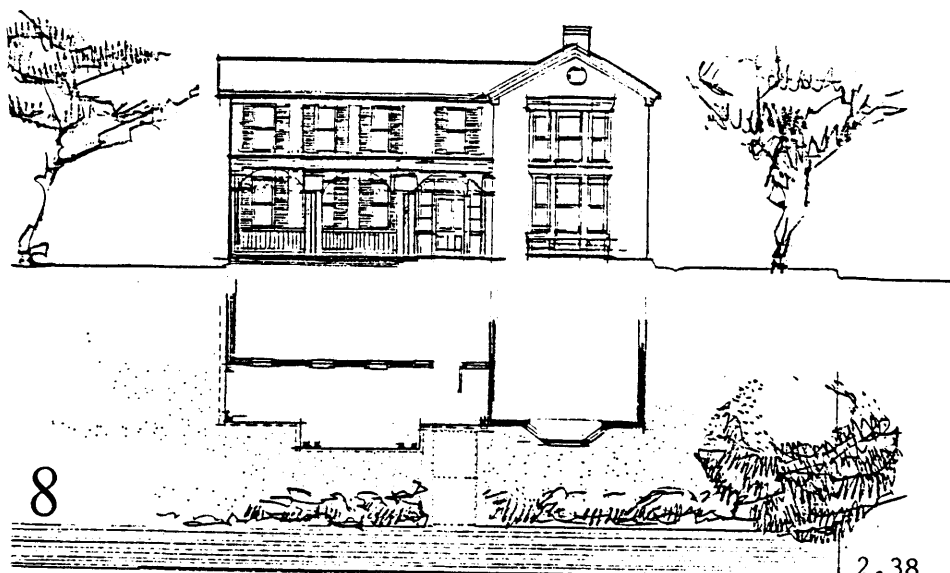
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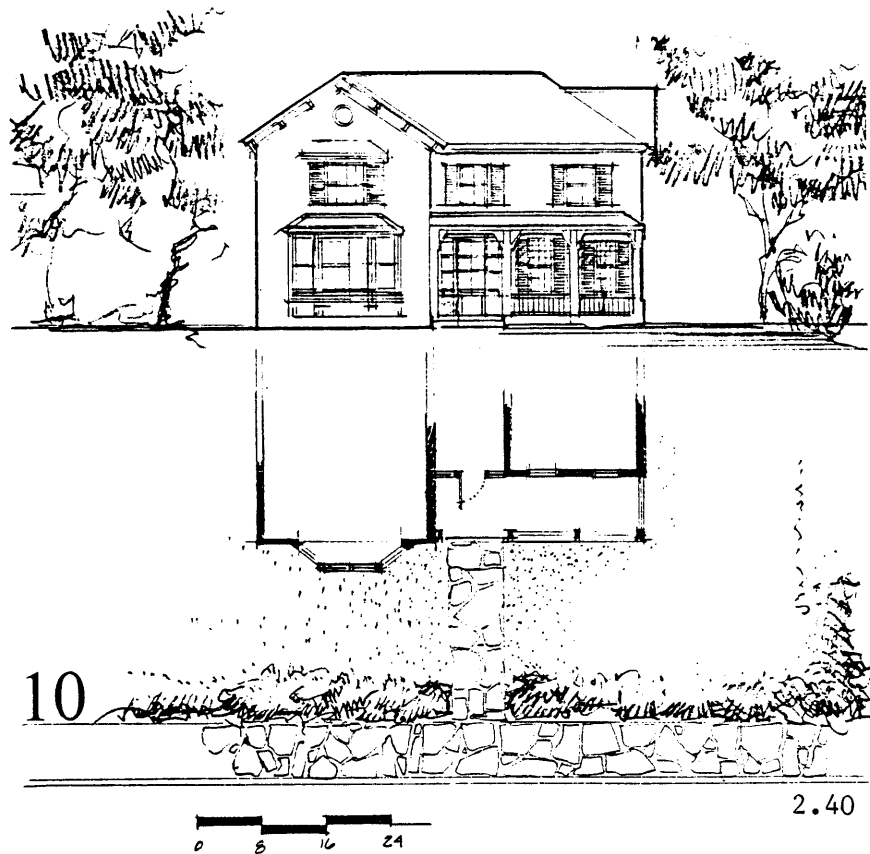
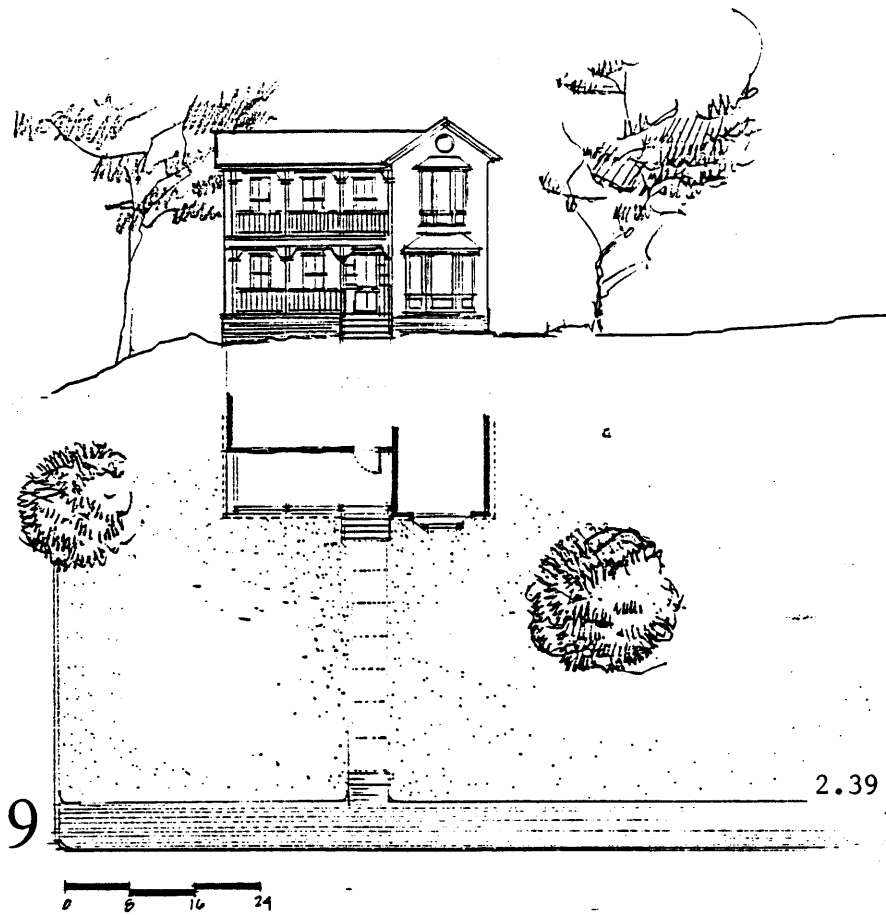


2.37

3. The third type, the most prevalent form, combines the earlier two types. Again this form is usually based on the addition of one wing to an existing part. By shifting one form against another, additions were made to be more congruent to the whole. The major foundations of the new and old could be separated. The asymmetrical arrangement accommodated the porch between them. Entry and transition is made along the leading edge. The separation is further intensified by the change of materials in the entryway, the space between the forms. Glass surrounds the door and clearly defines the separation between the two continuous surface forms.



2.38

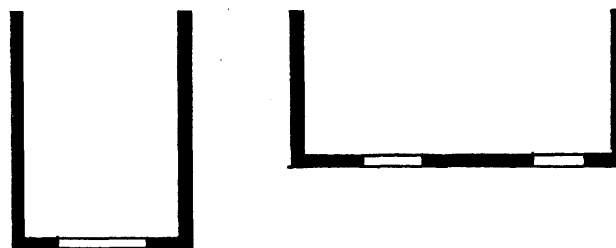


Form

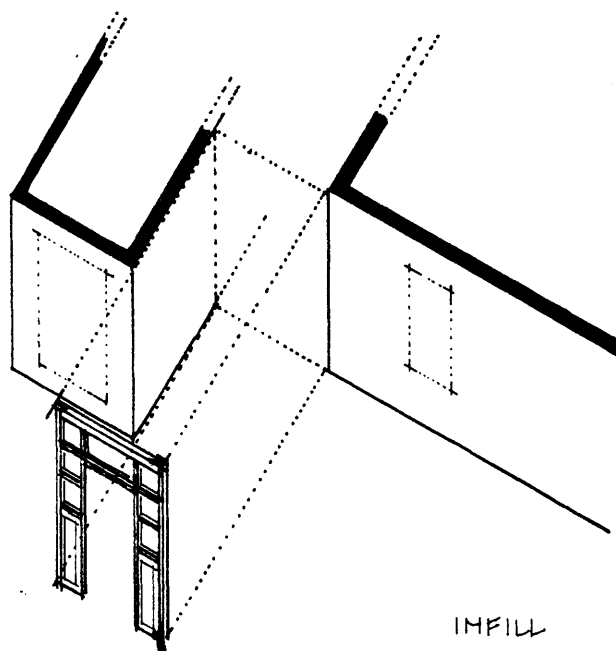
The predominant characteristic of all of the porches found along the street is the definition of the cornice over the porch. This articulation brings the projection of the porch room territory to the public space.

The form is also found in the commercial edges of the town. The street borrows from the language of the porch form to define entry and welcoming transition into the stores. Permeability is maintained at the street level. The cornice, similar to that found on the porch provides the breaking line between continuous surfaces of the private space above or to the side. The association of the porch territory to the proximity of the street provides the reference along which movement is registered.

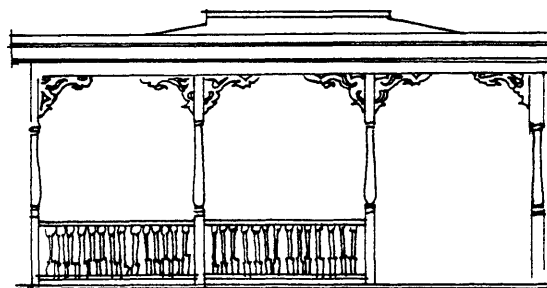
The second floor has traditionally been a place of residence for shopkeepers and other residents. The association of the size of commercial space to that of housing makes up the dimensional references within the town.



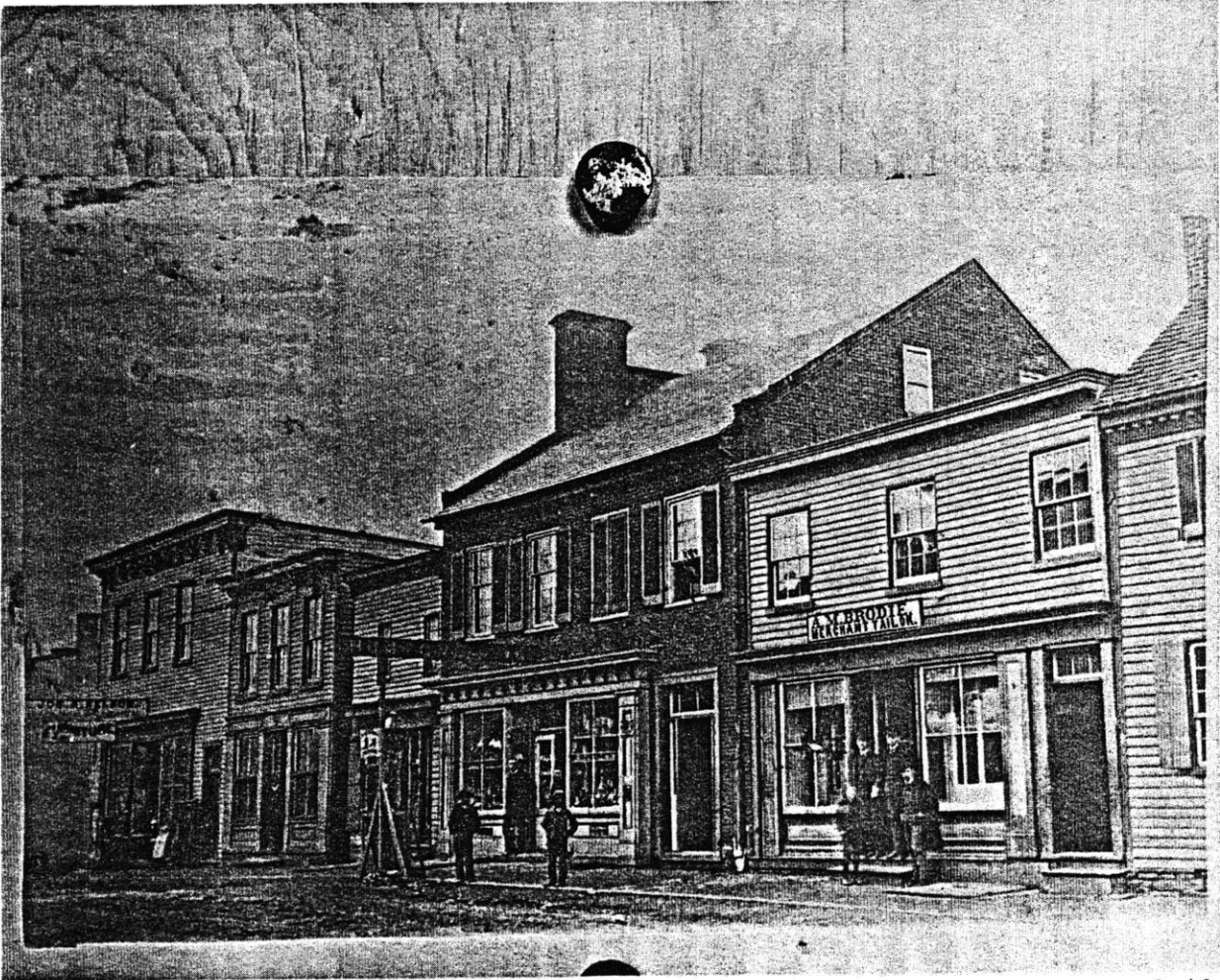
CONTINUOUS SURFACE



INFILL



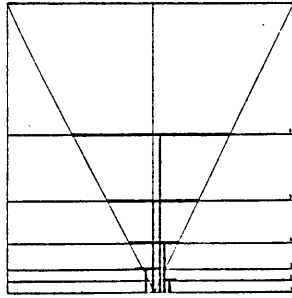
INFILL



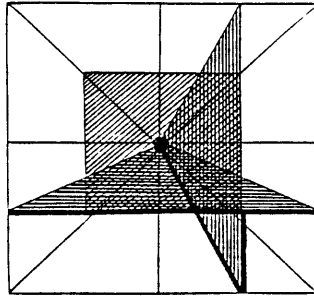
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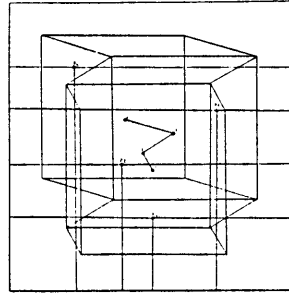
2.43



1



2



3

3.01

The word `stimulated` says everything necessary for the beginning of action. The word `stimulated` suggests the prehistory of an incipient act, its connection with what has gone before, its bond with the past.

The affective possibility of going beyond a beginning is further characterised in the concept, which, extended from beginning to end (not only to the beginning), produces a cycle--where motion is the norm so that the question of its beginning disappears.

Under the impact of this normative motion a creative disposition takes form within us. Since we ourselves are moved, we find it easier to set things in motion.

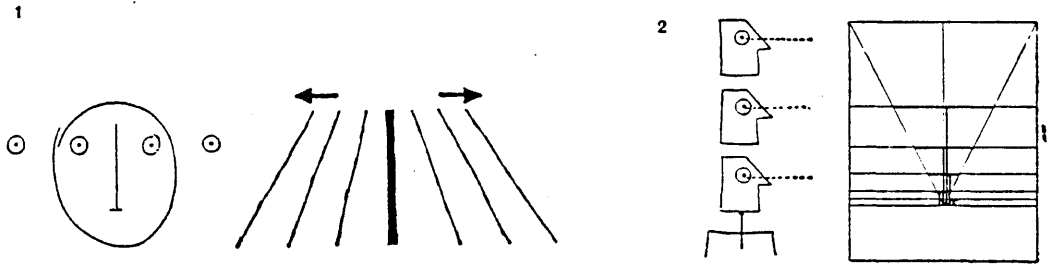
* * *

Ingres is said to have created an artistic order out of rest; I should like to create an order from feeling and, going still further, from motion.

- Paul Klee¹

¹Jurg, Spiller, ed. **Paul Klee Notebooks Volume 1: The Thinking Eye.** New York: Wittenborn, 1961. pp. 1, 168.

3



3.02

MOTION

Renaissance order and image projected a static understanding of space: a single viewer within a single space with a given direction. The perception of space rarely fits this description. As Klee points out, there are multiple viewpoints of anything. Even the movement of the head or differences in the height of the observer change the perception of a spatial relationship. In art the varying ways of depiction of spatial continuities are seen in painting. Kepes describes the use of inverse perspective in Chinese painting:

'The deviation of the constructive-impressive modes which take the place of ordinary construction is based on a logical process.'
Subjective theory of space: combined operations (multi-dimensional simultaneity of projections).
Projections in different positions, deviating from pure central perspective (multi-dimensional contacts and highly articulated structures).

Shifting viewpoint:
Contrasting viewpoints due to movement of spectator [1].
Change in the relation between height and horizon means:
lifted horizon, widened horizon [2].
Varying subjective height.
Alternation of downward and upward views.

Summary: Change of subjective height, visual point variable to left and right. Movement and countermovement lead to a balance of movement.

In accordance with the ancient Chinese canons, Chinese and Japanese paintings assign to linear perspective a diametrically opposite role from that given it by Western painters. In their system parallel lines converge as they approach the spectator. They open up the space instead of closing it. The picture space is not a scientific optical diagram of the apparent positions of objects but a medium of experience, an active

Motion

two dimensional panorama for the spectator, who lives the image. The same approach was used in many early European paintings.²

In Kepes's example, the perception of space in painting coincides with the image of space as an experiential medium.

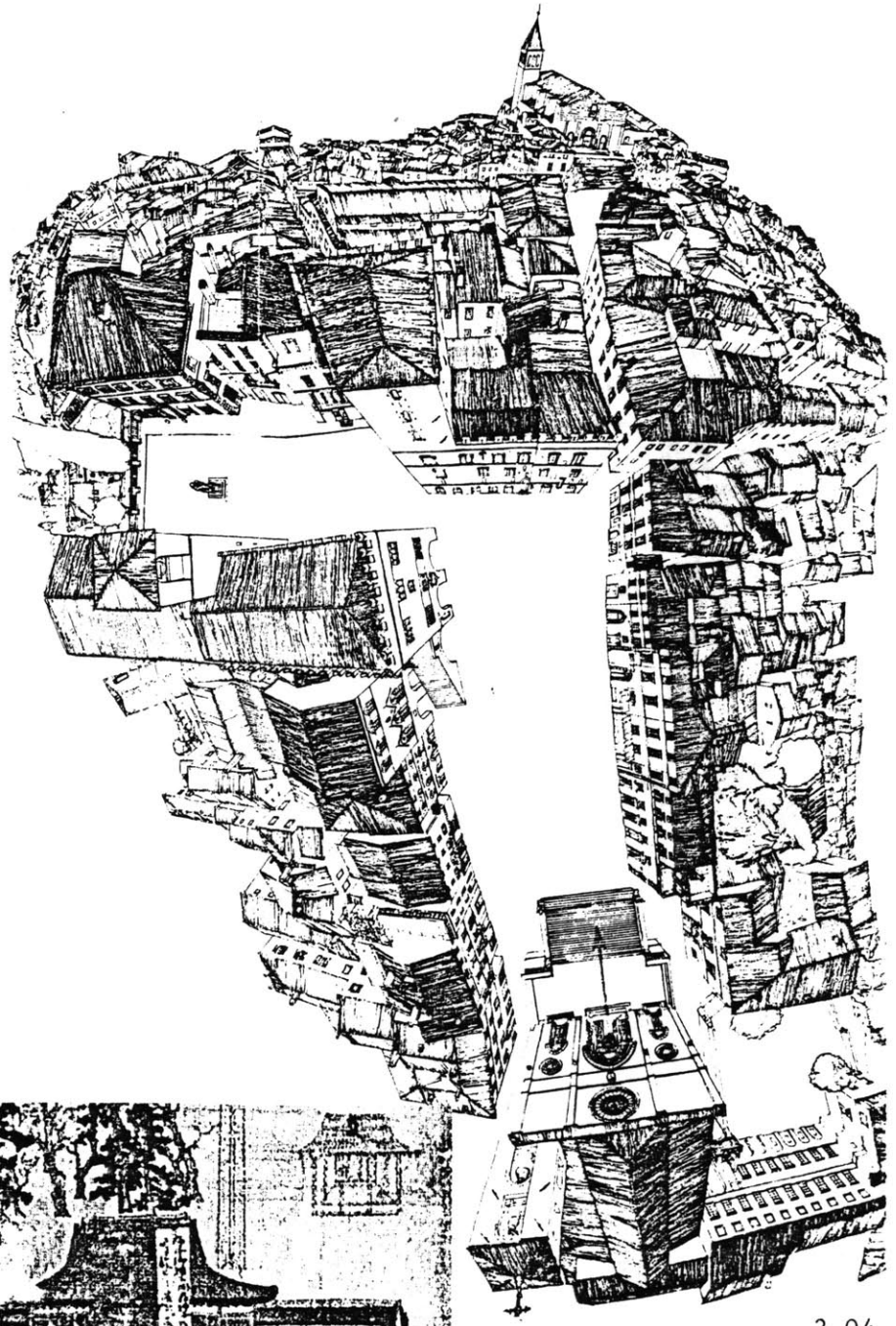
Modern painting and graphic imagery have reinstated inverse perspective as well as multiple and simultaneous perspectives. All of these images reveal the desire to understand a greater whole than the single view, to establish a dynamic relationship with different events or places. Such a dynamic relationship is established in passage through the parallel sequences of time and place.

Parallels may be interpreted in visual perception, two dimensional spatial structure, and three dimensional territorial understanding in the design of

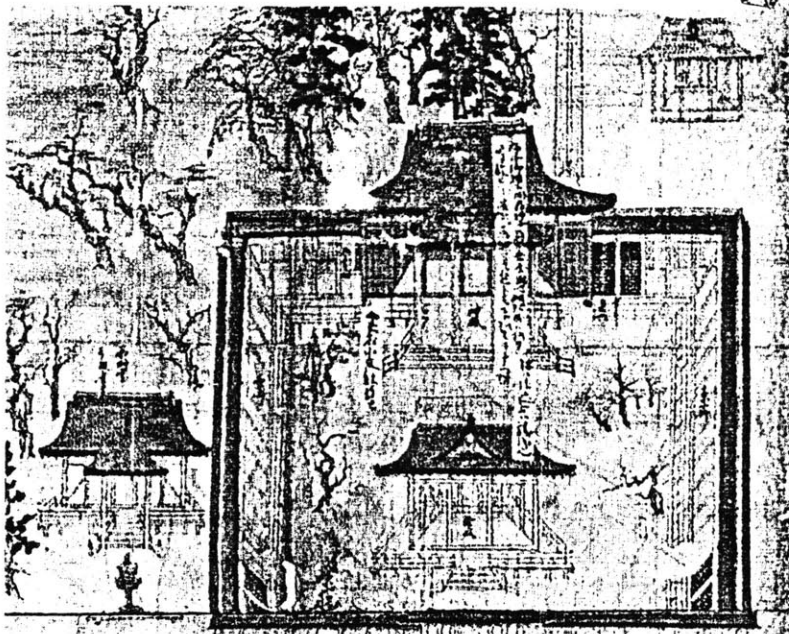
spaces. They are usually projected as two dimensional images in plan or section. How we interpret the design drawing and passage is a dynamic relationship between experience and notation.

In the physical world, we do not, except through maps, depend on drawings to give us a perceived image by which we guide our every move. We know and understand our environment through our motions in space. This chapter investigates the role of motion in establishing a continuous reference frame. We look to the interplay and exchange between forms to generate motion. Through this, we comprehend passage.

²Gyorgy Kepes. **The Language of Vision.** Chicago: Paul Theobald, 1951, p. 86.

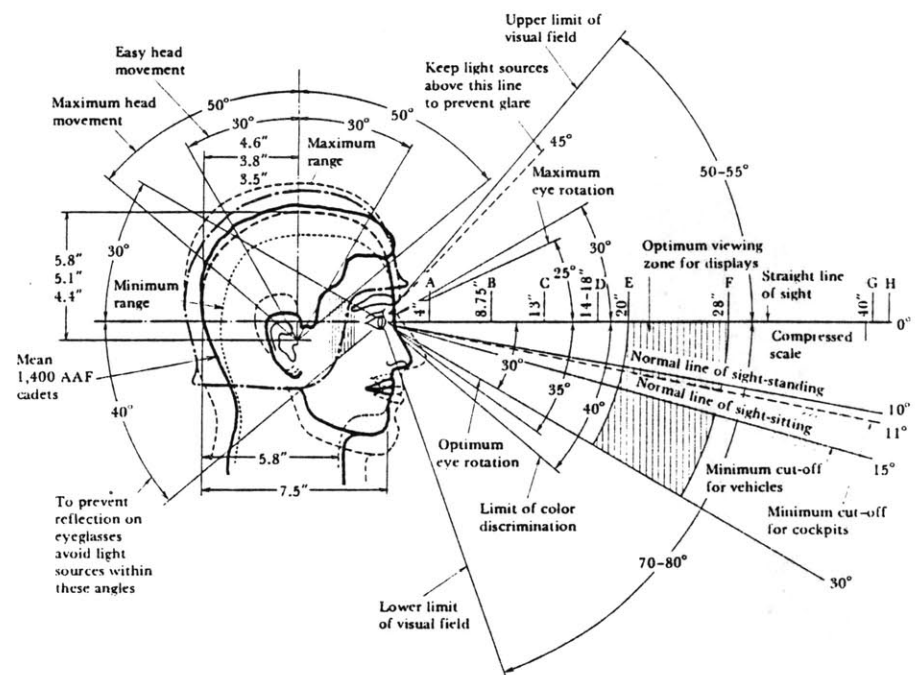
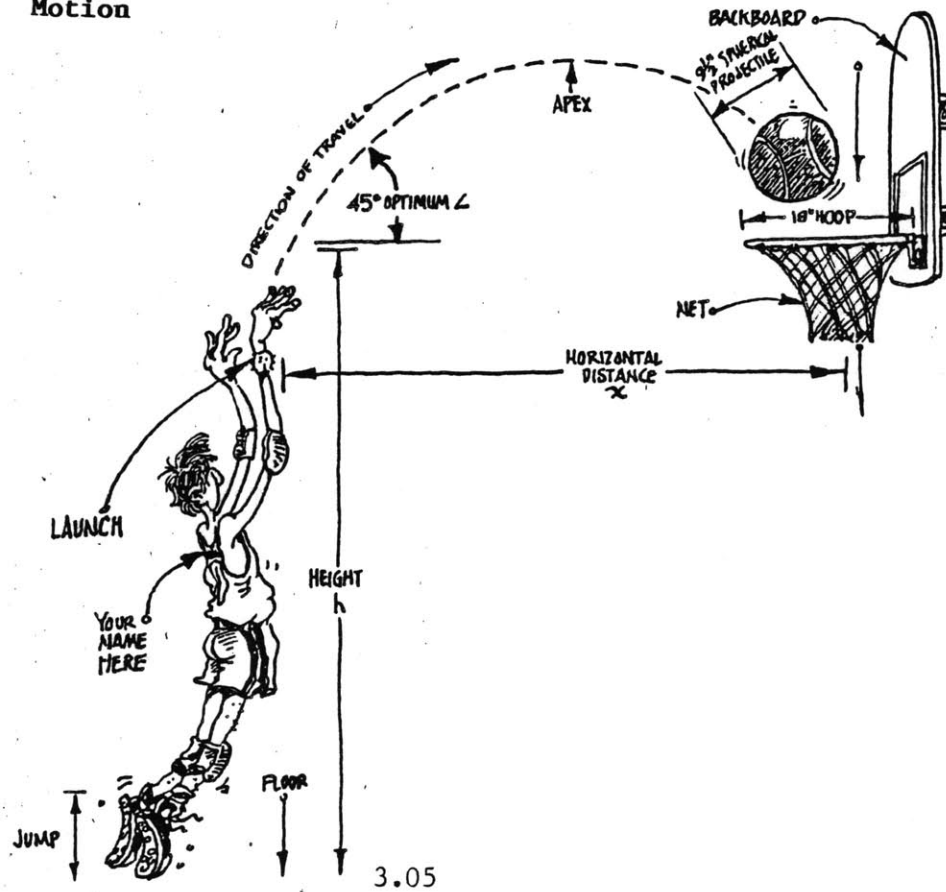


3.04



3.03

Motion



Henry Dreyfuss's basic data concerning vision

3.06

The observer and the reference frame

The observer interprets the forms of passage through the motions of his body and his eyes. Perception studies have focused on visual understanding through the retinal image. Gyorgy Kepes describes the relationship between the observer and the three-dimensional field:

Looking at a landscape, at people on the street, or any single object, as the visual field has no definite boundaries, one can only make spatial interpretation of the things that he sees--their location, extension--based upon his own spatial position. He judges the position, direction and interval of things seen by relating them to himself. He measures and organizes up, down, left, right, advance and recession in a single physical system of which his body is the center and identified with the main directions in space. The ego-centered horizontal and vertical axis is the latent background. If the spectator moves his head, eye, or body--changing his position and consequently changing the retinal field from the natural position,--he at once transfers to the object nearest him the original role of the human body and the main directions of space remain valid.³

³Ibid., p.19

Within these actions, there are three steps to determine the spatial quality of a field. First a single frame of reference is established and measured. Second, movement allows the transfer of the egocentric perception of a single frame to move from the observer to objects within the first frame. Third, the movement generates spatial depth by giving a perceivable and understandable distance with which to measure and organize the elements observed.

The basketball player experiences a visual field that is approximately 60 degrees horizontally and 30 degrees vertically. Within this perception frame, the relationship of elements to the plane along the horizontal surface or their relative dimensions creates his understanding of distance and size. He makes a basket and scores two points.

Probably not if he has never done it before: It takes practice. The motions of the body passing along the court and into the air need to be experienced and internalized before projections of the ball into space are likely to

Motion

find their way to the basket. Experience seems to be the lesson that most clearly determines the ways in which we associate with our built environment.

The mind is capable of making the complex mathematical calculation of the projection of the ball through the hoop without thought. It is also capable of interpreting the shape of an object, even if distorted by rotation or perspective foreshortening.⁴

The single object may form a clear mental image which is to be retained. Contrasting this, the field of similar objects takes longer to recognize. In the field we judge variation through relative comparisons in size and organization.

J.J. Gibson attributes much of these perceptual capabilities on texture gradients and judgment of spatial organization based on contrasting relationships.⁵ He bases his interpretations on the assumed correlation between object and environment. His theory does not include the manipulated image or optical illusions.



"Alice and the White Rabbit," John Tenniel, 1866.

3.07

Objects and relationships of forms which are a part of common experience give clues by which we measure unknown objects. The height of wainscoating along a wall, the position of a door knob or the height of a step are dimensionally relatable to indeterminable objects around them.

We make associations of objects within our environment based on an awareness of a consistent and understandable texture or back-

⁴See Lynn A. Cooper and Roger N. Shepard. Turning something over in the mind. In **Scientific American** 251(6), December 1984.

⁵James J. Gibson. **The Perception of the Visual World.** Cambridge: Riverside Press, 1950.



The observer and the reference frame

stimulus and attention span, found that the stimulus fails to attract or hold attention after repeated presentation. When the stimulus no longer is attractive, it is said to have reached adaptation level, or is a part of the neutral framework against which forms are measured.

ground. Coherence and continuity to the dimensions or texture of the urban fabric must be maintained in order to retain a sense of association in passage. Conversely, changing sizes and orientations will differentiate a building or place as a spatial event in a field. It is important to maintain consistency within the field in order to articulate the differences.

One theory that might be postulated for further study is that of adaptation and visual interest, developed by L. B. Cohan and others.⁶ This theory, developed through studies of infants'

These theories may partially explain the implicit nature of understanding of spatial structure. The neutral framework may be the rule system--such as a dimensional system or relational system--through which an understandable organization is felt in vernacular architecture. What would be immediately detectable would be the differences in the built world and not the norm.

Yet, returning to our basketball player, we would find that repeated motions and habitual actions allow him to function within his spatial field. Can these motions and understandings be measured as dimensions within a context as a basis for understanding the context or as one test for adherence to context within a design?

⁶Cited in Julian Hochberg, Visual perception in architecture, in *Via* 6.

Motion

Motion and territorial exchange

We perceive space directly, not as the motions on the retinal image.

As designers, we relate to the two dimensional image in the production of drawings, plans, elevations, and sections. Each of these is used as a tool to interpret the spatial quality of a place. Spatial understanding and associations with the forms in design is generated through motion. Only drawings or models of places allow us to be in all rooms simultaneously and view their organization.

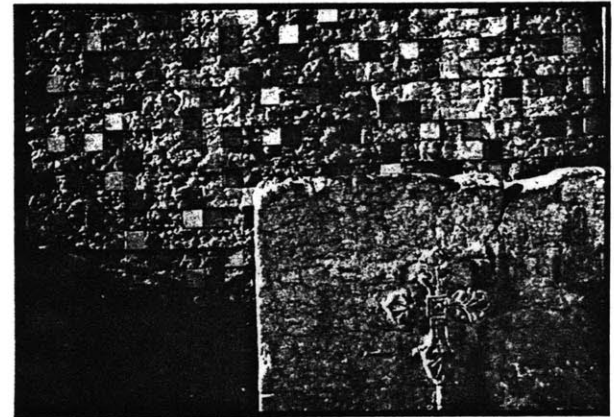
Through the study of visual thinking we relate the built experience (the three dimensional world) and the conveyance or transmittance of that experience to memory, drawing or other medium in which the idea or form may continue. Notation of that experience has lead to multiple and inverse perspectives, axonometrics and isometrics. All focus on the wish to convey multiple vantage points or the wish to relate one spatial connection with another.

Most of our knowledge comes from passage through each environment. In this section, we shall investigate how these forms of passage exist and how they correlate to the rest of the organization of a place. The focus will be maintained at the scale of a site and will not extend to larger organizations of city form. We examine the organizations of spatial zones and built understandings of these forms, both in vernacular and designed buildings.

The sensation of continuity is based upon the norm or the neutral level of perception. Later, in the observation studies, we will analyze those norms as a measurable dimension of motion in plan. This requires searching for patterns of occurrence and associations in the form of motion.

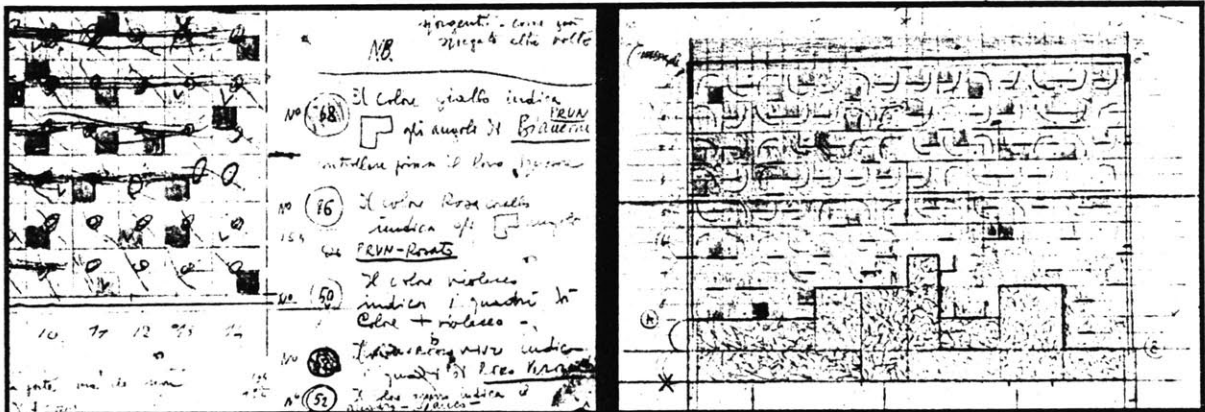
Carlo Scarpa

When the elements are found to be relatable within the structure of the space, associations of groupings of singular forms may be read in succession. These create the sensation of motion by stimulating the movement of the retinal image from one form to another. Scarpa's composition of marble blocks on a single plane of a wall is an example. Passage here is two-dimensional along the surface. The colors of the tiles establish the zones into bands of two squares deep. Rotations provide the sense of motion.



3.09

3.10



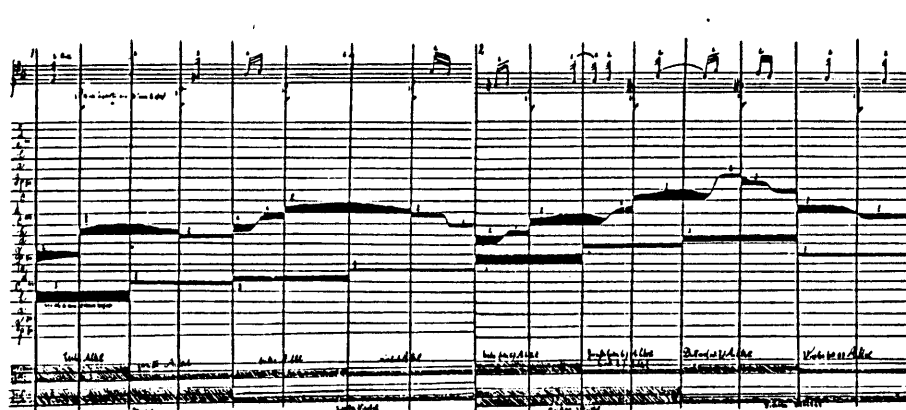
Motion

Paul Klee

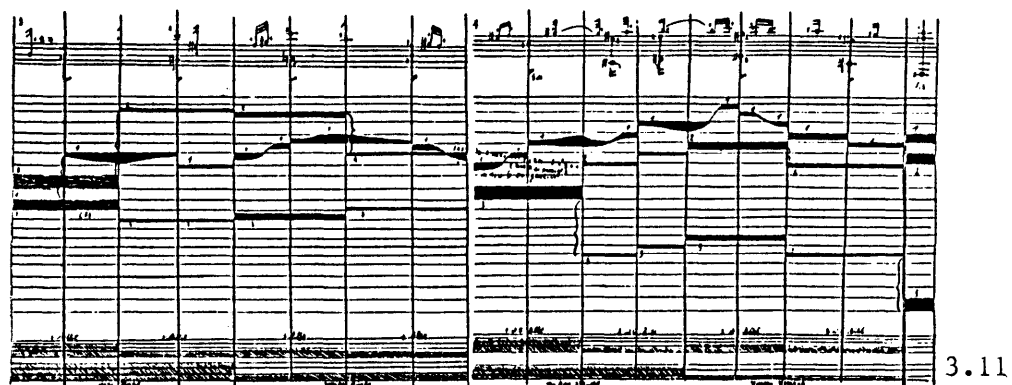
When two zones, each with their own associative forms, meet and pass, the form of the registration of elements creates a new spatial understanding or reciprocal exchange. Territories associated with one may interact with territories of another. The result often provides a new interpretation of the previous elements.

Klee's paintings and analysis of music demonstrate these principles. Continuities are established with zones or bandings of territories. These bands are wide or narrow, depending on their level of interaction with other elements. The

degree of displacement and differentiation from the norm give the individual bands character. These show the orientation of motion or orientation of spatial continuity and the larger organization of the musical composition, from first to last movement. Exchanges between territories are understood through similarities of form characteristics. Here the dimensions of the forms may also be found to have a correlation. The measure or rhythm of a place felt through movement may give a particular understanding to the form of the place and the exchanges of territories that generate the access routes.



Paul Klee
Territorial exchange



Motion

Additive continuity

In viewing vernacular architecture, the basic elements of the structure and organizational principles are often seen easily comprehended due to the singular nature of use and territorial understanding of space. The exchange and degrees of reciprocity demonstrate the relationship to the external world as a territory that serves as a reference to the whole.

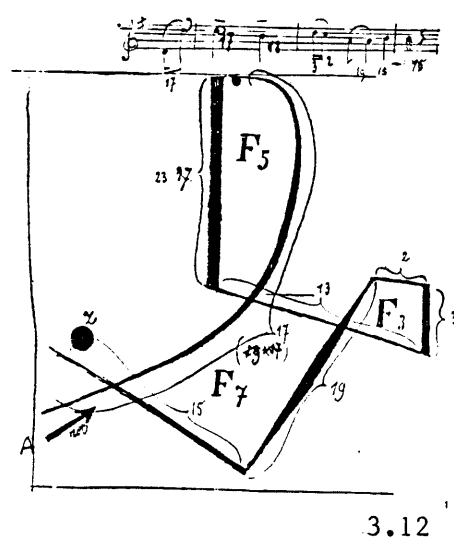
In his studies of Spanish villages, Maurice Smith found consistent dimensions to access territories and built territories within a given town. These dimensions varied from region to region, indicating that dimensions and their repetitions may be one measure of adherence to context.

Philip Thiel's study of a pond as a major organizer in a park demonstrates the orientation and reciprocal relationship to larger organizing forms.⁷ It also demonstrates a consistency within the individual unit as part of the understanding of the direction and orientation of the larger organism.

The following diagrams demonstrate the horizontal exchanges in the setting of two Japanese towns, Kyoto's Nishijin district and the post-station village Unno, Nagano prefecture. For each there is a constant pattern of organization and a dimensional relationship between the forms which particularize the forms of passage both through the street and within the tissue of the sites.

⁷P. Thiel, The problem of sequential connectedness in the urban environment. In **University of Washington Department of Urban Planning/Development Series No. 1**, pp. 1-9.

Paul Klee
Additive continuity



Motion

Unno Village

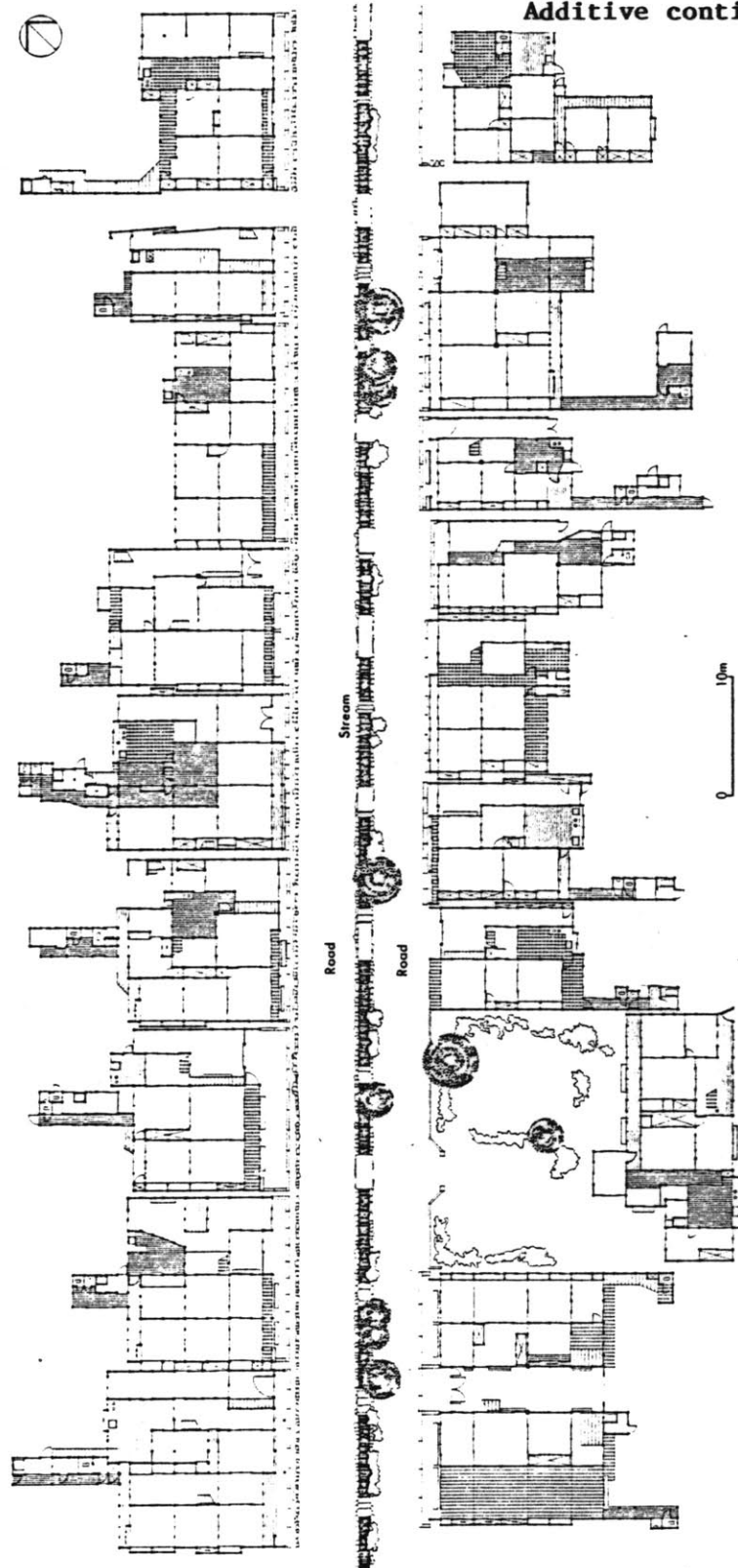
In the Japanese house of the Unno village, the wood floors are found in the public edge zone of the house as well as in the interior. They demarcate areas of passage and transitions between territories. They mediate the interior territories: The tatami mat rooms (or dirt floor areas).

The patterns observed follow that of a zone territory at the edge of the building consisting of the veranda and steps. These edge forms mediate inside and out. Closure may occur at the outside edge, keeping out weather or light. Often there is also a line of closure on the inside boundary. These separate the inside room from the more public passage of the veranda. When the line of closure to the outside is open, the veranda may associate with the outdoor space and thus demarcate the edge zone of the outdoor room. Since many outdoor territories of Japanese houses are walled in, they lend themselves easily to the definition of outdoor room.

When the line of closure to the inside room is opened, the territories of that room and the veranda are merged to form one continuous space. Passage then relates to both zones and generates an exchange in territorial depth. The richness in this form of passage inheres in the ability to borrow associations from each territory.

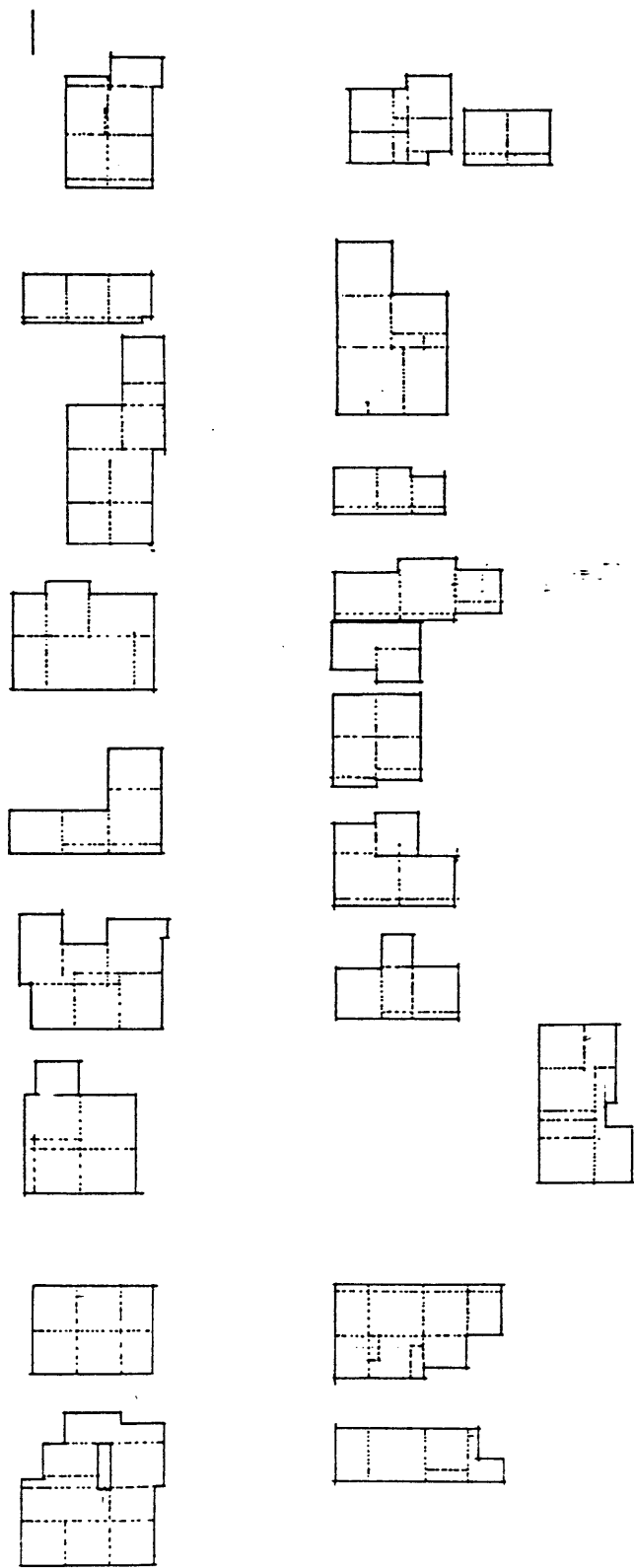
When the pattern moves into the house, the veranda form (passage) runs perpendicular to the edges of the house and moves within the house. The definitions of territory shift from inside and outside to between two or more interior territories, or join an interior territory to an enclosed exterior space. The exchange of inside and out within the building--either in the form of a courtyard or as in the interlocking of hands--acknowledges the passage between the forms of closure and exchange of open territories.

Unno Village Additive continuity



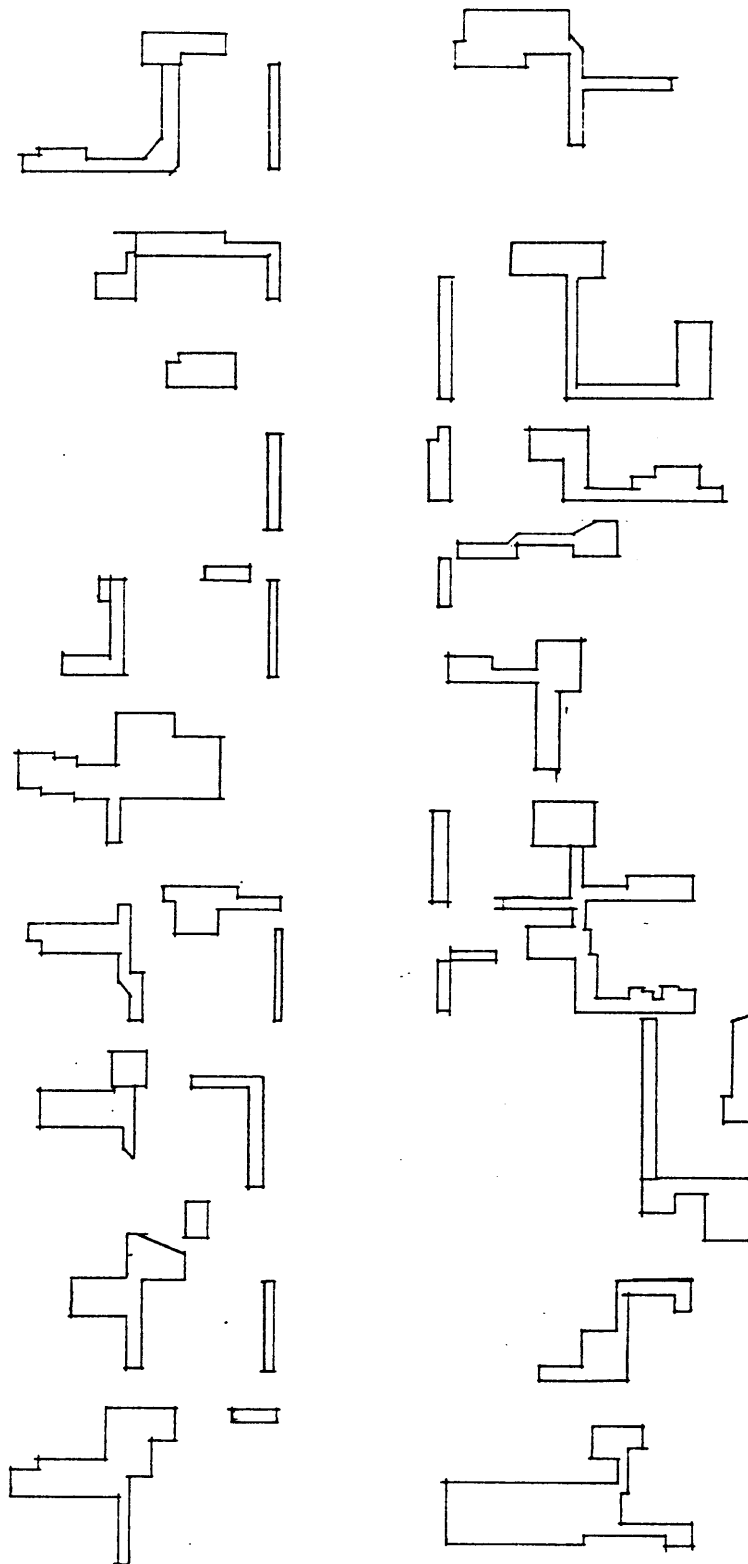
3.13

Unno Village

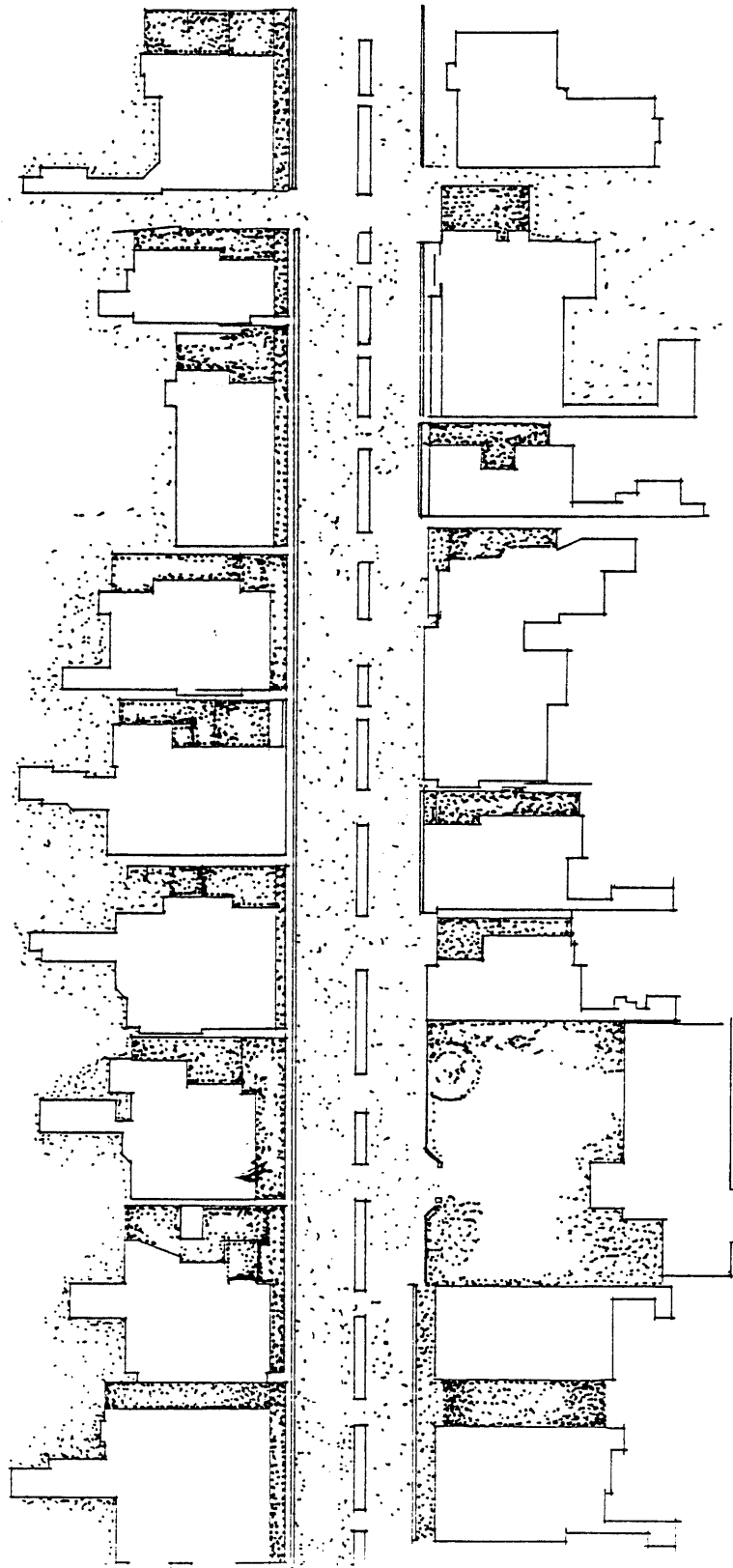


3.14

Unno Village



3.15



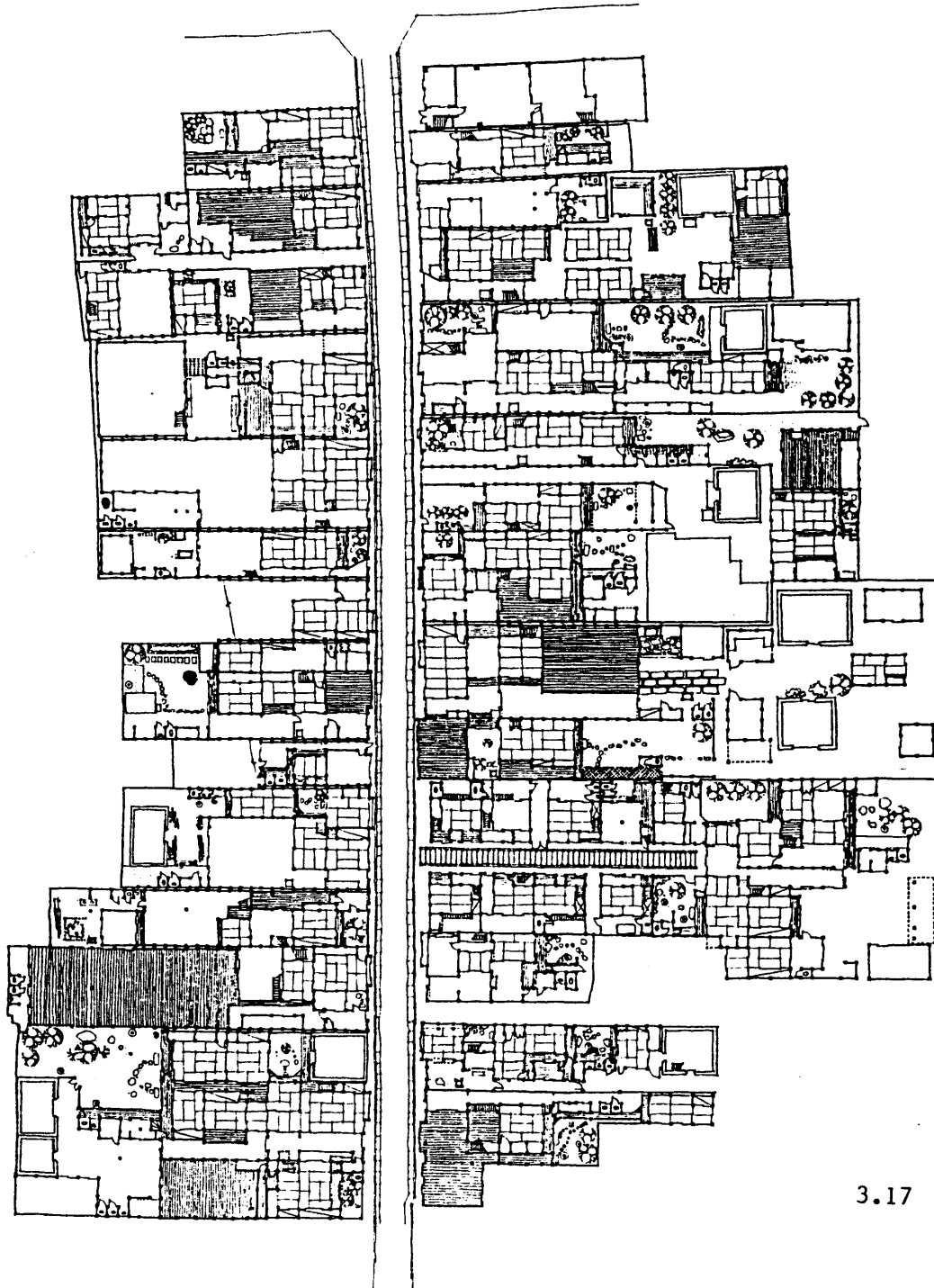
3.16

Motion

Kyoto Nishijin district

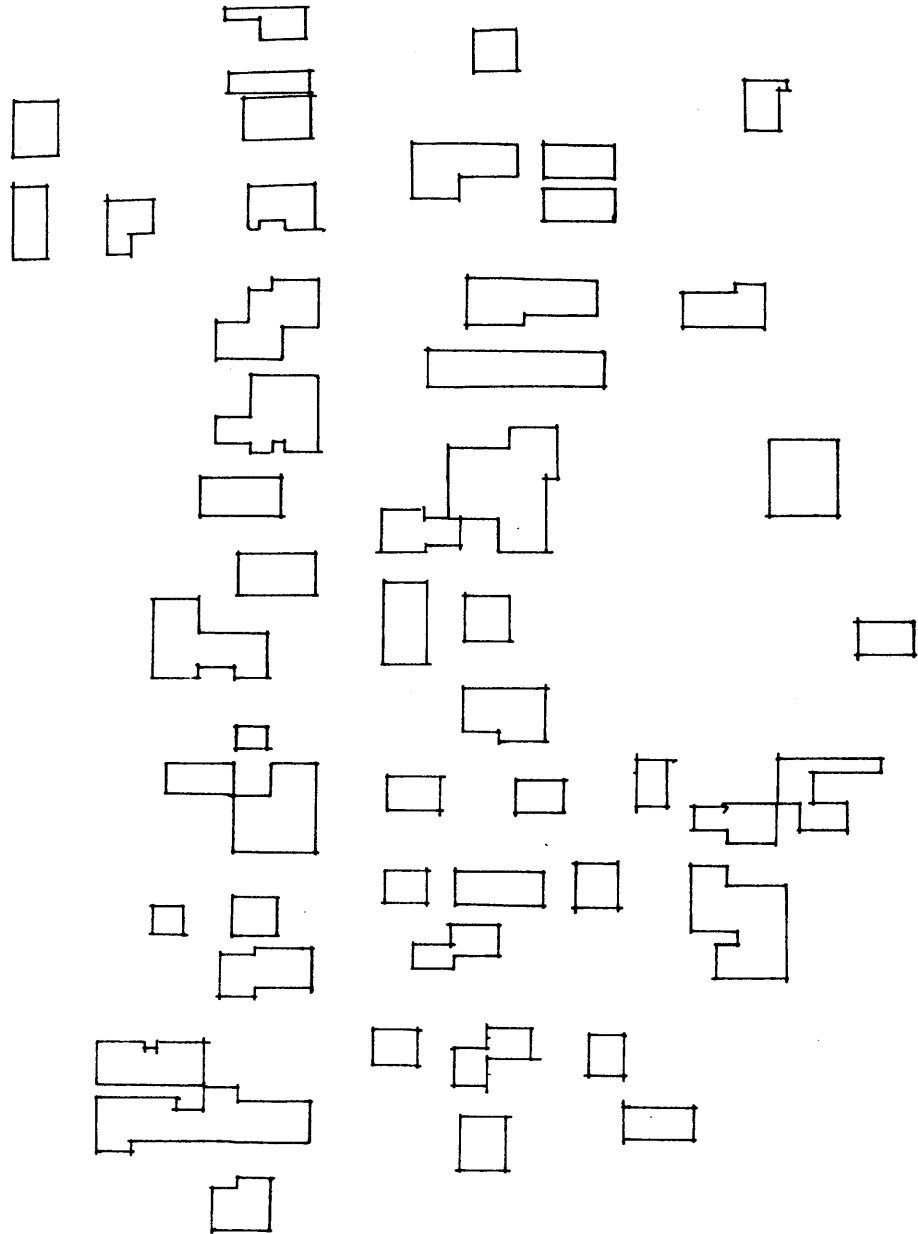
In the Nishijin district, limitations on the size of frontage and requirements for privacy have led most entries to be a direct move in through doors to an interior space at the ground level. This entry space runs perpendicular to the street and reaches to the back of the house. Variable closure lines limit entry to the back. Parallel to this entry space is a receiving room onto which a guest rises to enter.

Kyoto Nishijin District
Additive continuity



3.17

Kyoto Nishijin District

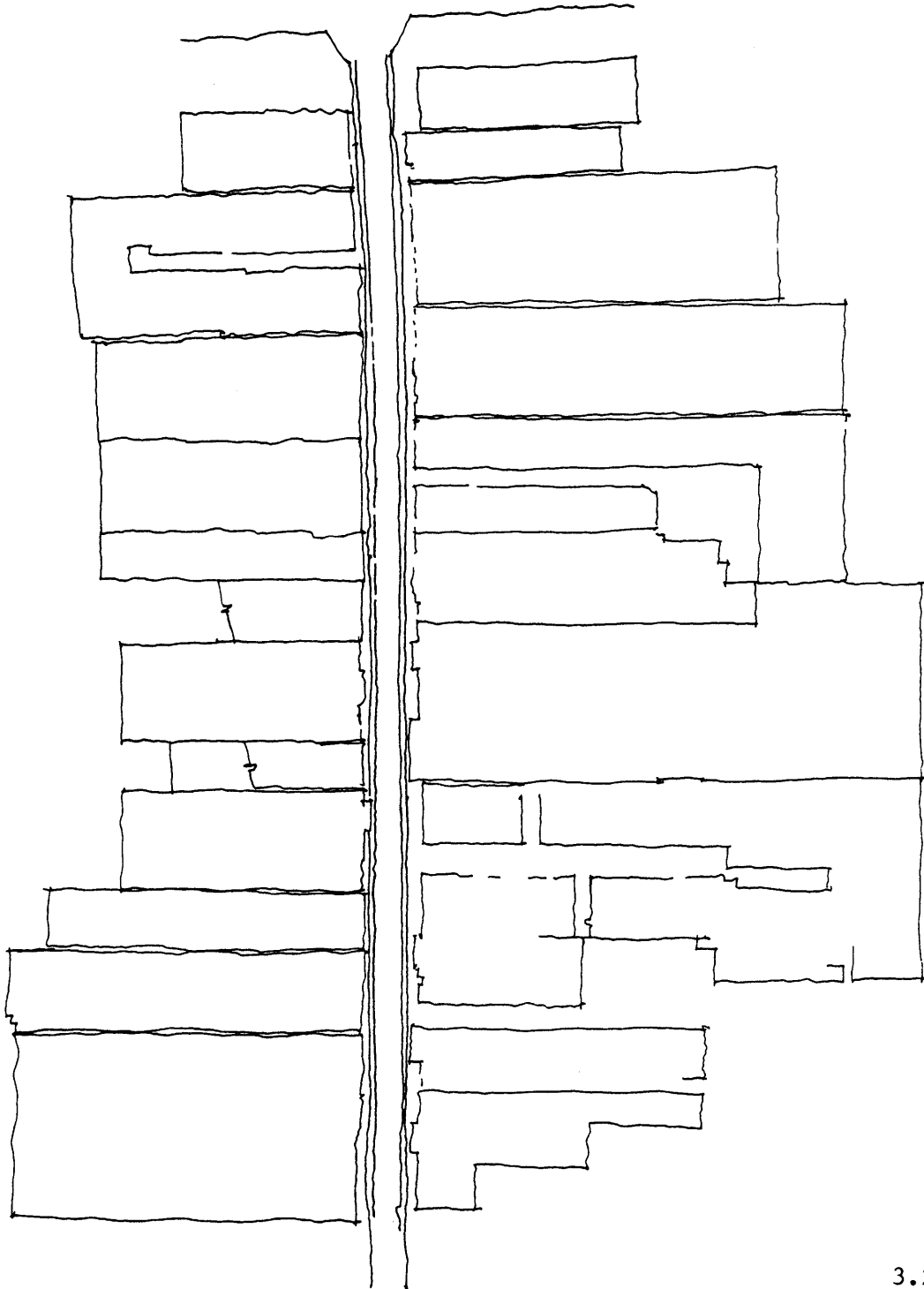


Kyoto Nishijin District



3.19

Kyoto Nishijin District



3.20

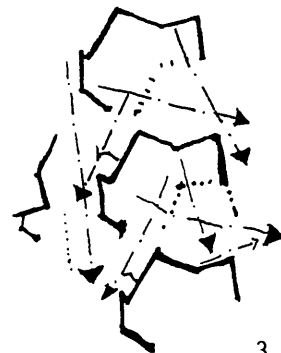
Motion

Geschwister Scholl

Exchanges of territories are often the result of passing dimensions. Scharoun's school, the Geschwister Scholl at Lunen, Westphalia, exhibits variations of geometry and changes in the angles of passing territories in a similar vein to those found in previous examples.

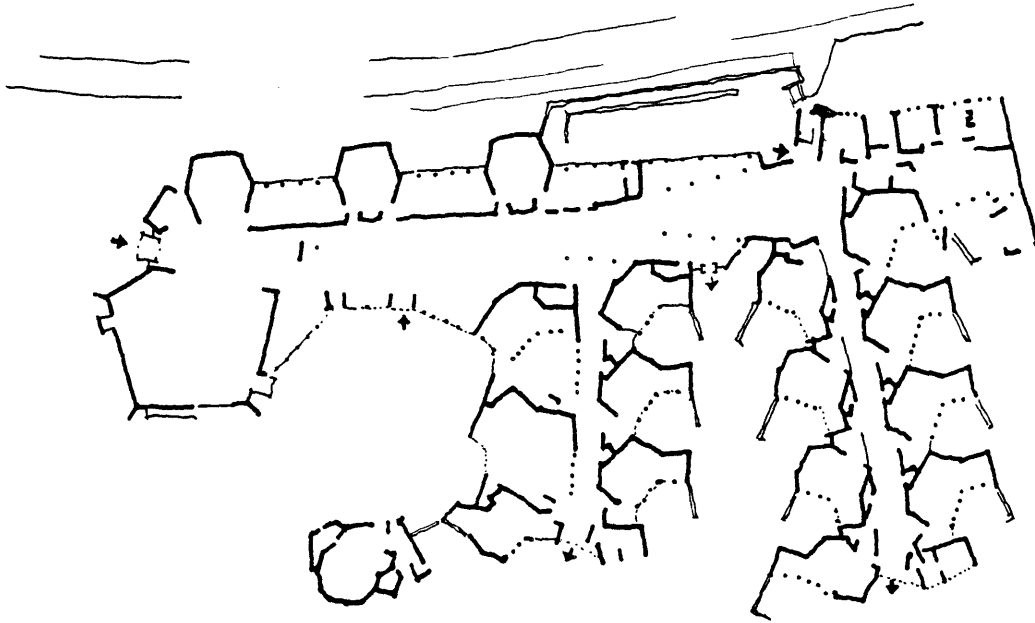
The exchange of dimensional understandings within the buildings gives an understandable size to the space of the exchange.

In an additive system of design, this systematic addition of territories generates the form of exchange, passage and entry.

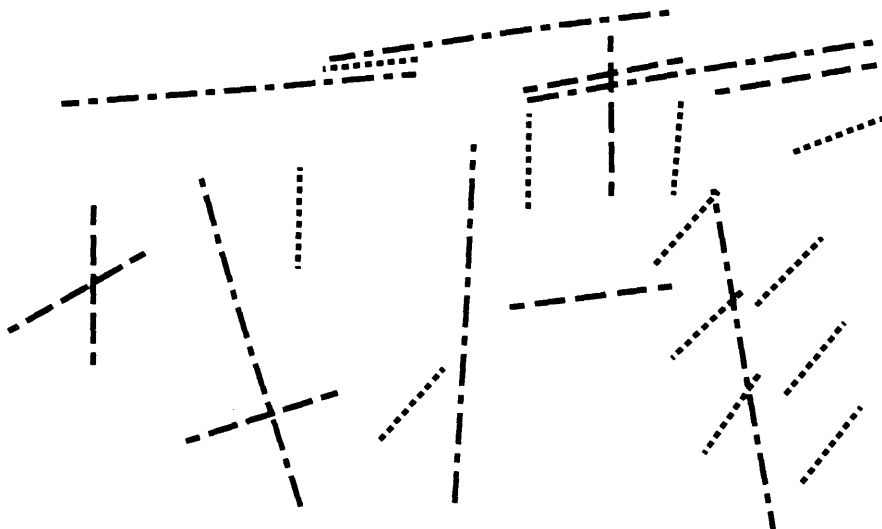


3.21

Hans Scharoun
Additive continuity

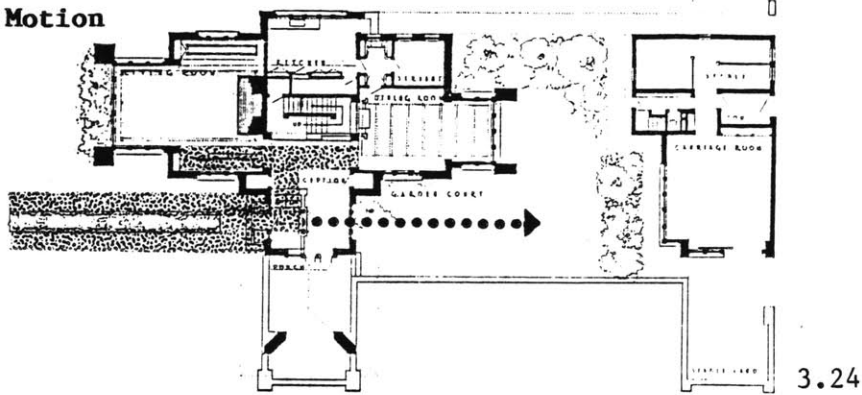


3.22

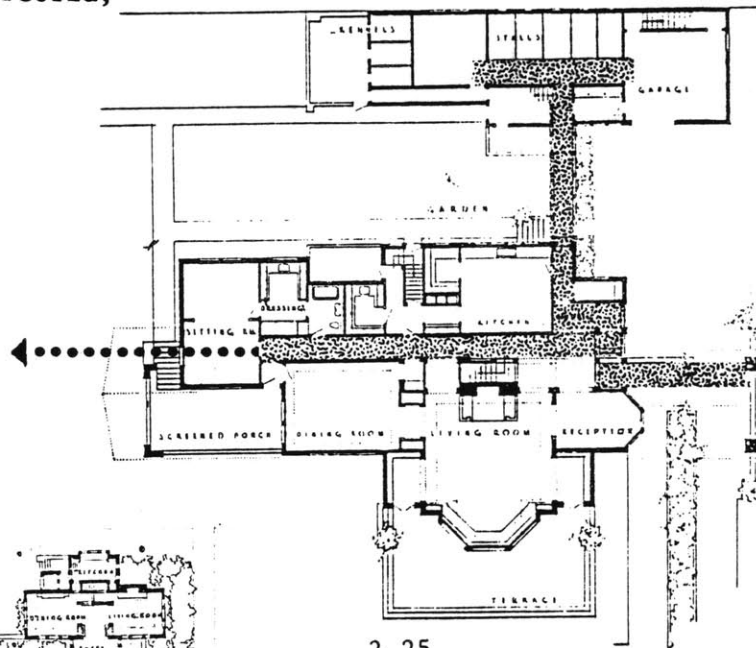


3.23

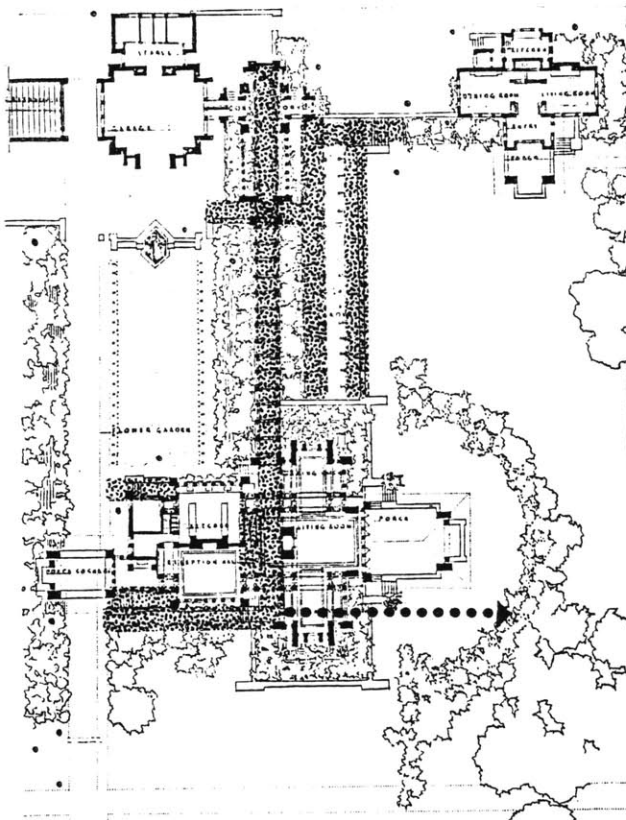
Motion



Francis W. Little House. Peoria,
Ill. 1903

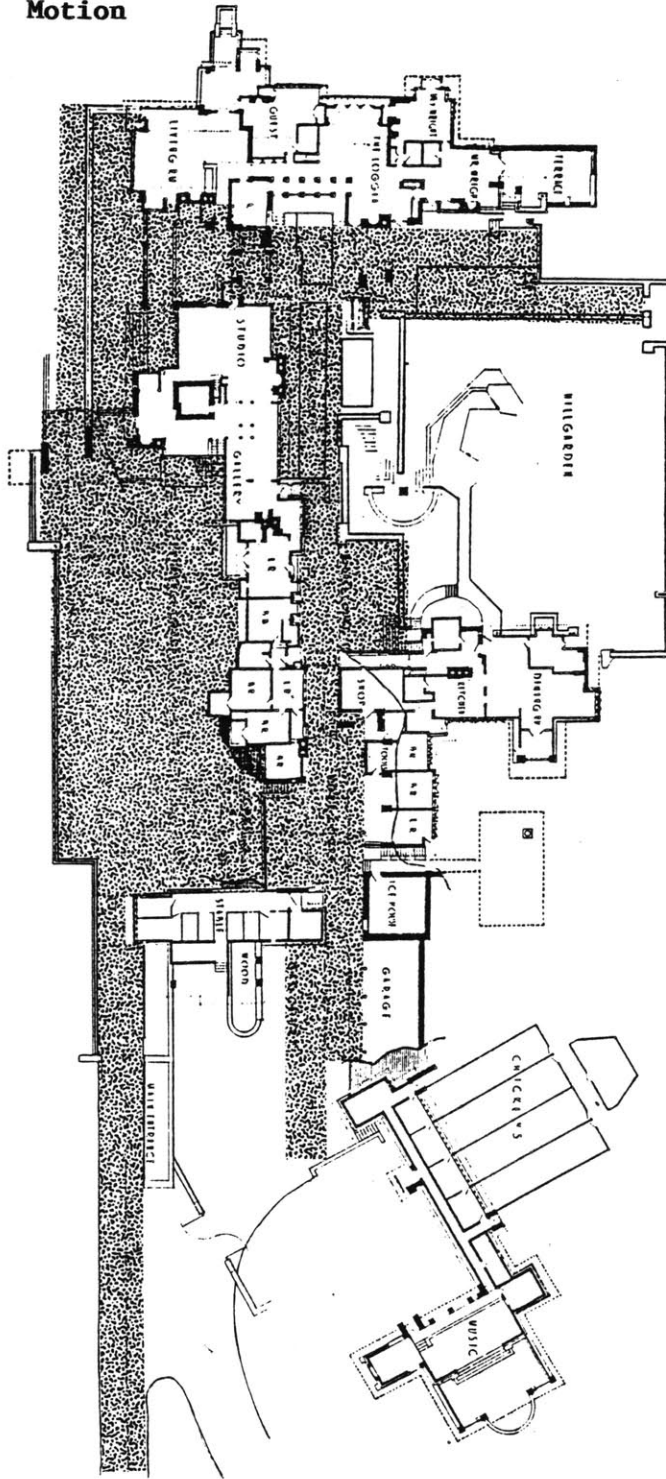


3.25
B. Harley Bradley House.
Kankakee, Ill. 1900



3.26
Darwin D. Martin House and
adjuncts. Buffalo, N.Y. 1904

Motion



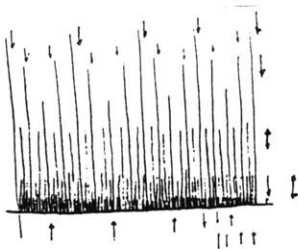
3.29
Taliesin III. Spring Green, Wis.
1925-

Wright's early buildings reflect the development of ideas of continuity and spatial exchanges. Built elements of houses move out into the landscape developing the sense of passage and reciprocity between inside and out.

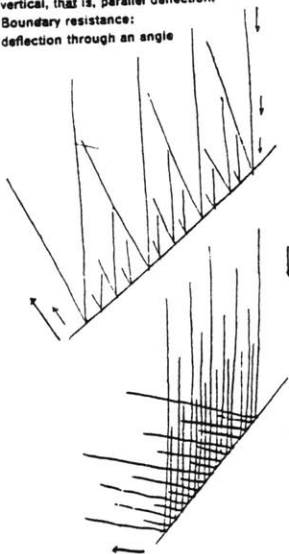
The form of entry and corridor are still contained on both sides and end with the extension of views where passage stops. In the Darwin D. Martin house, the elements of garden and path create distinct zones of occupation yet share in the reciprocal exchange through patterns of repetition in dimensions and overlaps at areas of coincidence of the dimensions. The form of the building is an intensification of those zonal exchanges.

Wright talks of developing the entry and passage into a building in the "void" between defined forms. The space of passage becomes a form in itself. This also allows for a greater sense of continuity with the exterior. Passage develops into places by shared associations.

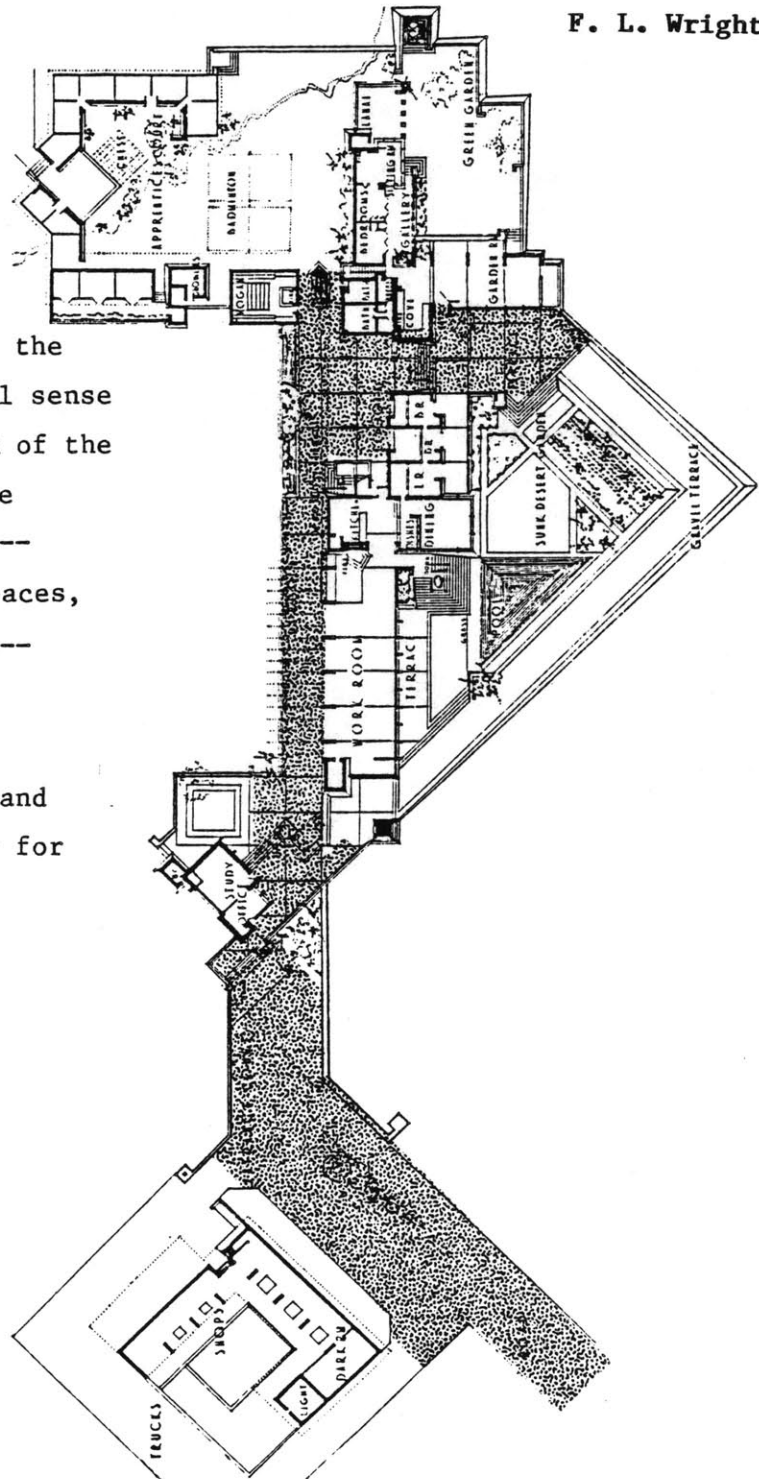
In the Taliesen buildings, the forms of passage reach a full sense of association with the form of the public and private zones. The boundary resistance of rooms--especially for the public spaces, living rooms, and work rooms--shares territories with the passage. Privacy areas are arranged to give definition and project a boundary territory for larger public spaces.



Boundary resistance to the vertical, that is, parallel deflection.
Boundary resistance: deflection through an angle

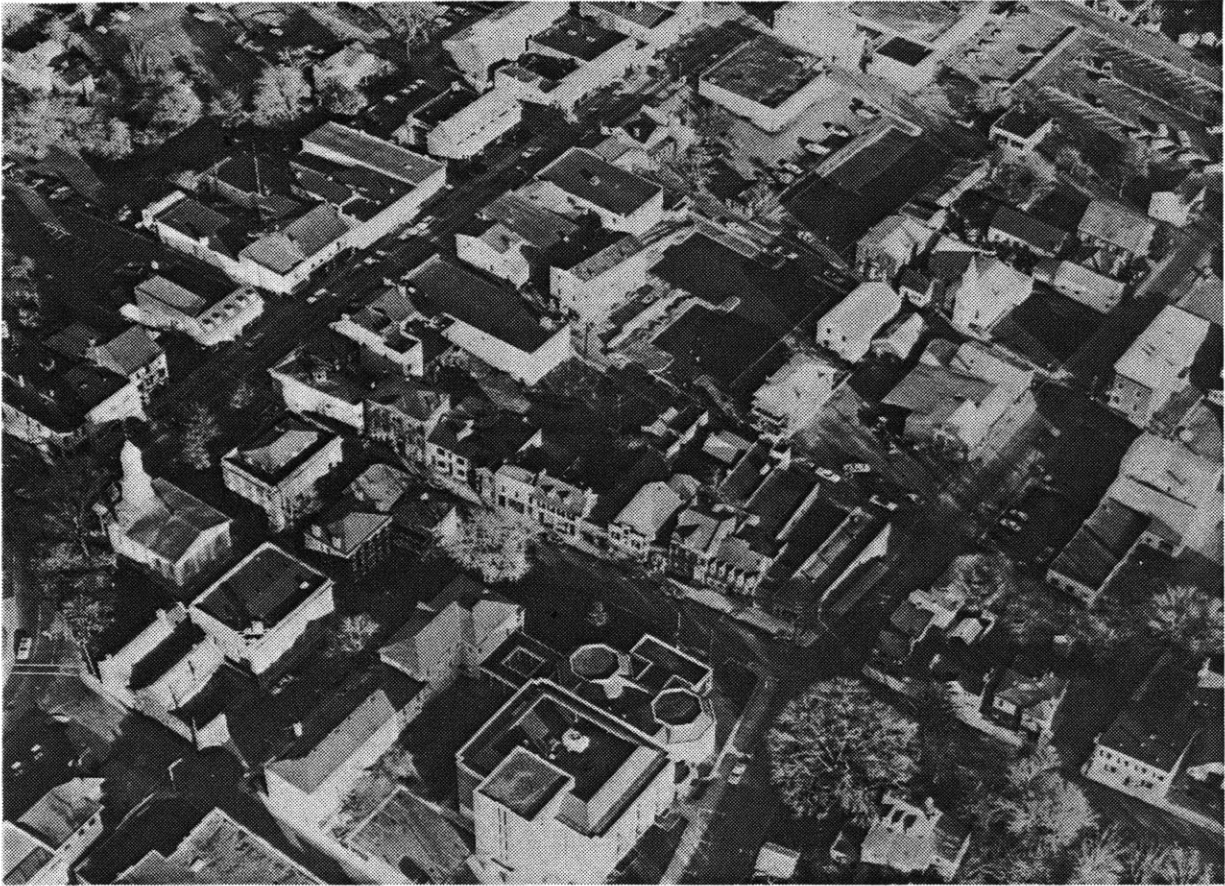


3.31



3.30

Taliesin West. Maricopa Mesa,
Paradise Valley, Arizona. 1938 -



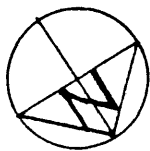
3.32

Warrenton

The basis for a dimensional understanding of Warrenton is the association between housing dimensions and the shops along the main street. Shopkeepers and professionals traditionally lived above their stores and offices. These dimensions usually maintained a domestic scale. Another reference dimension to be found in the town fabric is that of the warehouse or supply store.

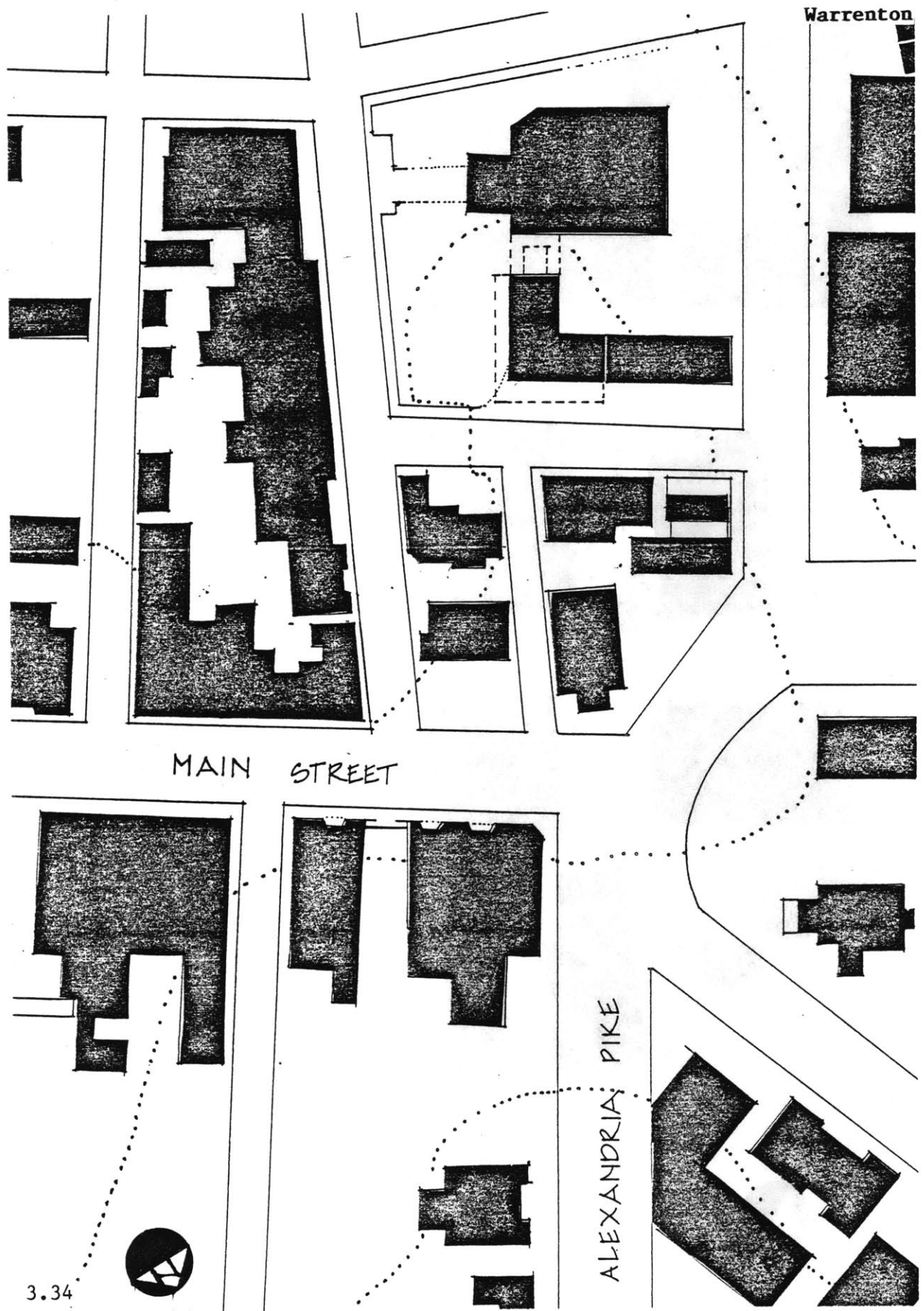
Warrenton was a major distribution center for the region. Consequently, those buildings developed in the areas of town closest to the railway system. Special functions--town hall, churches, schools, etc.--were set into the fabric and act as markers.

3.33

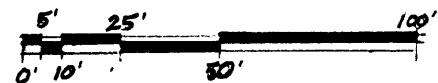
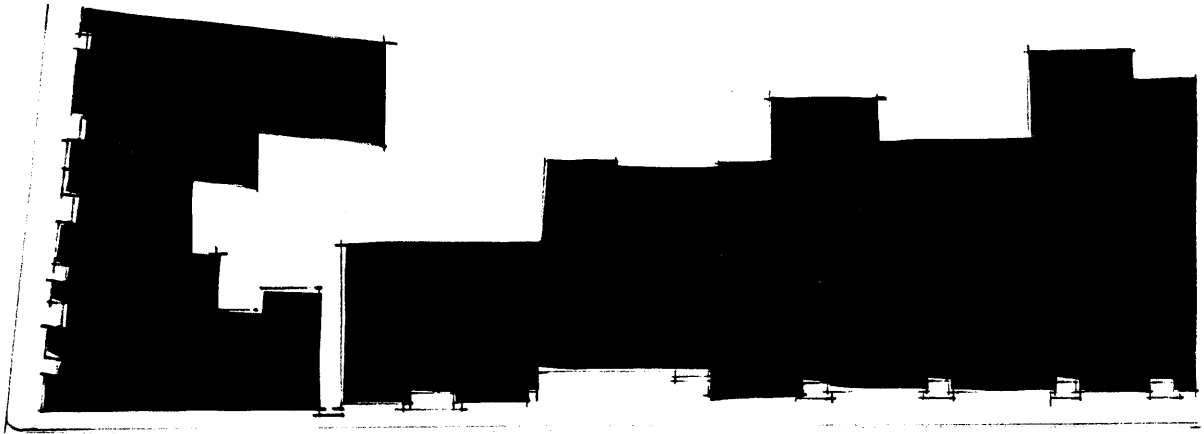


0 100 200 300 400





3.34



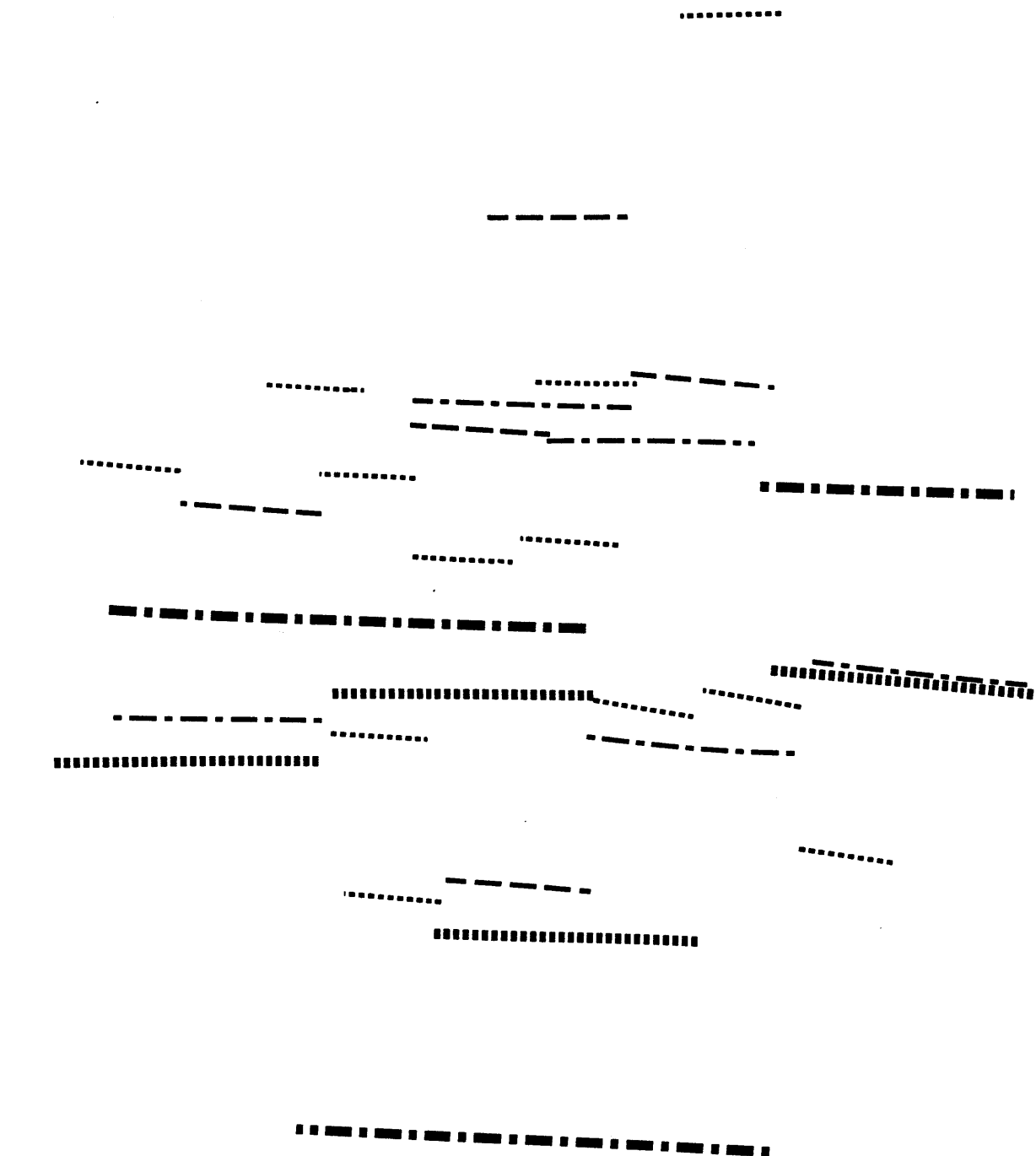
3.35

Warrenton



..... 30
- - - - - 40
- . - . - 65
| | | | | 80
| | | | | 145 FEET

3.36



..... 30
--- 40
--- 65
..... 80
--- 145 FEET

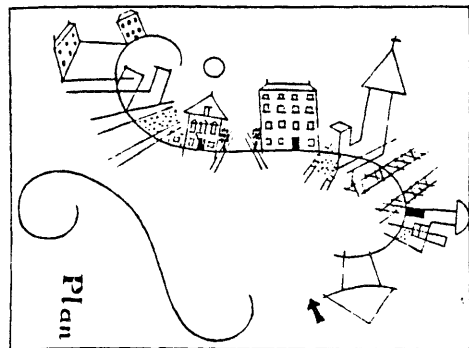
3.37



.....	30
-----	10
- - - - -	65
	80
=====	145 FEET

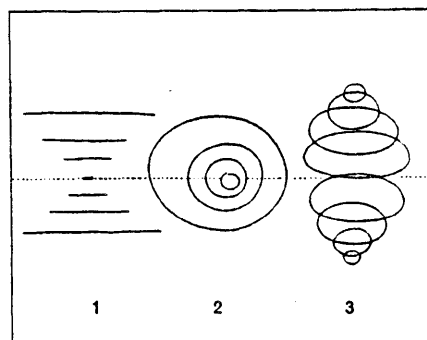
SIMILAR DIMENSIONS REPEAT
BOTH INSIDE AND OUTSIDE
THE BUILDING FORMS.

3.38



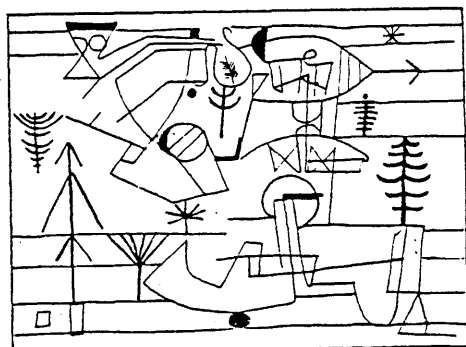
4.01

Linear sketch from:
1923/11: *Town square under construction*, p.153.
Simultaneity of perspectives in plan of picture.
Front and side view and perspective elements
of ground plan combined.



4.02

1. 'Material, terrestrial horizon.
2. Ideal horizon, widened.
3. Synthesis.'



4.03

Linear sketch from:
1922/150: *Plan of garden*. Watercolour.
Simultaneous projection with interpenetration of
base and elevation. Representation according
to essence and appearance.

4

The PARTS and the WHOLE

The site...and some theories on reciprocal relationships. Theories that have contributed to notions of visual images of spatial form and definition of the problem.

Man's perception of his urban environment and the changes brought about through technology have a major impact on the design of passages. Greater spans of singular built forms and faster means of transport have widened our perception of places. The ways in which the image of the urban environment is manipulated to make it more understandable have led to many models, some more successful than others.

The demarcations noted in the observations may not have been the method of generation used by the architects or builders. The measurements, dimensional comparisons, and patterns allow us to understand the system as it exists and is observed as a way of comprehending an organization of a field of relationships. Design using an additive process requires the

The parts and the whole

systematic displacement of spatial elements. These elements must be built with the principles of reciprocity. The Scarpa, Wright, and Japanese buildings are all examples of these systems. They either developed through cultural associations or individual design philosophies, but all comprehend built territories and reciprocity.

The previous chapter examined the nature of passage generated through territorial exchanges on the individual building and street. This chapter examines some theories through which we might generate larger organizations of groupings of the given forms on a site.

If we wish to distill design principles from vernacular forms or designed organizations, we must first understand the dynamic relationship of the individual unit to the whole. Each level--the part, the object, the groupings of objects, whole systems--relates to the other levels through the dynamic associations created by patterns of use, movement and form of territories. Use and functional

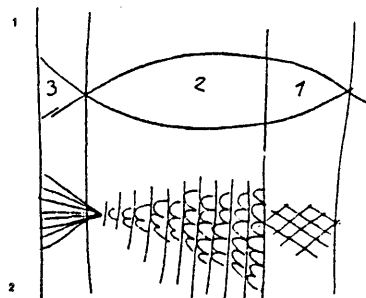
associations with cultures are indivisible from the form.

Klee: dividual and individual

These excerpts from Klee's notebooks speak to the essential problem of the differentiation of the unit and its relationship to the whole. As Klee reveals in his studies of dividual and individual, and individual and whole relationships, differences in size and variations with the parts of each size, account for the structure of a two-dimensional image.¹

At each size or at each level of recognition, we must interpret a different set of reference frames. Building forms which exhibit a reciprocal relationship provide an understanding between internal passage and external articulation of the form that we experience in passing.

¹ Jurg Spiller, ed. **Paul Klee Notebooks Volume 1: The Thinking Eye**. New York: Wittenborn, 1961.



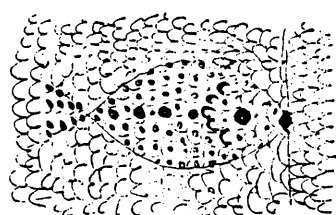
The relation between the individual and the dividural belonging to it. In the higher unit the limit of the perceptible is always reached. Perceptibility does not go beyond this limit, but remains within the perceptible whole, entering into its parts, its dividural rhythms. Thus the lower is always the dividural.¹

For example, the fish seen as an individual, breaks down into head, body, tail, and fins [1]. Seen dividurally it breaks down into scales and the structure of the fins [2].

The individual proportion is determined by the relation between 1, 2, and 3 and cannot be essentially changed; in any case, nothing can be omitted. A few scales may be missing from the body, but we cannot do without the head, the eye, or any of the fins [3].

The dividural structure of this fish is variable in so far as it matters much less whether it has 330 or 350 scales than whether or not it has a head. Thus the distinction between dividural and individual involves a value judgment.

¹ dividural = lower, divisible structural unit.
: individual = higher, indivisible unit.



Fish with scales

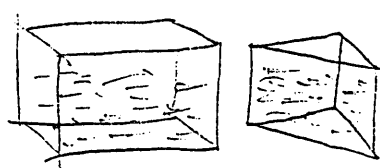
But is the fish always an individual? No, not when it occurs in large numbers, not when 'it's teeming with fish', as the saying goes [4].

4.04

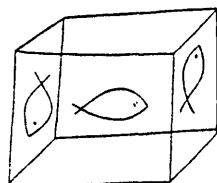


Pond with fish

4



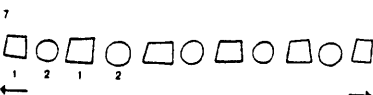
5



6

When it's teeming with fish, we have not one fish but many, we have a fish-pond or an aquarium [4, 5].

In this other fish-tank I must neither add nor subtract anything [6].

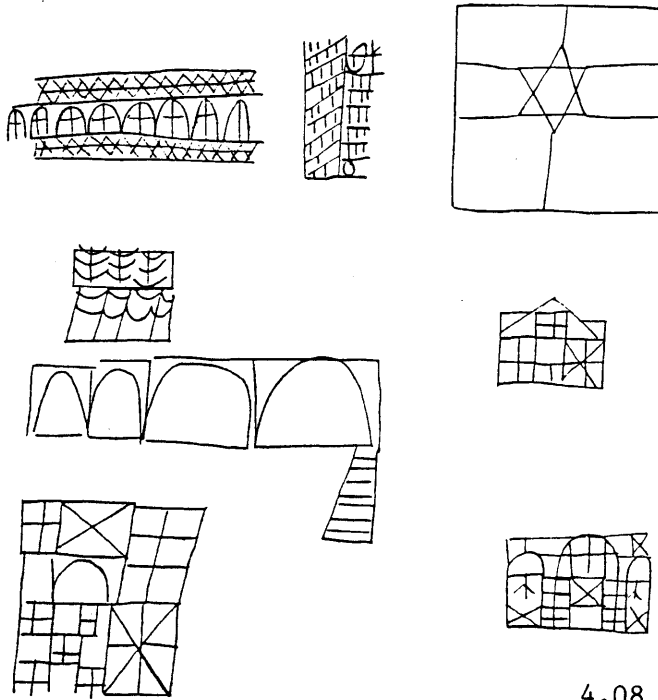


7

4.05

Exhibition of fish-tanks: many fish-tanks, arranged rhythmically, a cubical tank alternating with a spherical bowl [7].

The longer and more indefinite the series, the easier it is to add or subtract a few without making any essential change in the exhibit. In the same sense I can line up series of concepts (e.g. sound, syllable, word, sentence, etc.)



Linear analysis from a structural composition. The parts work together in a way that suggests the multidimensional simultaneity of architectonic elements. Analysis from 1924/127: Structural composition. Colour drawing.

4.08

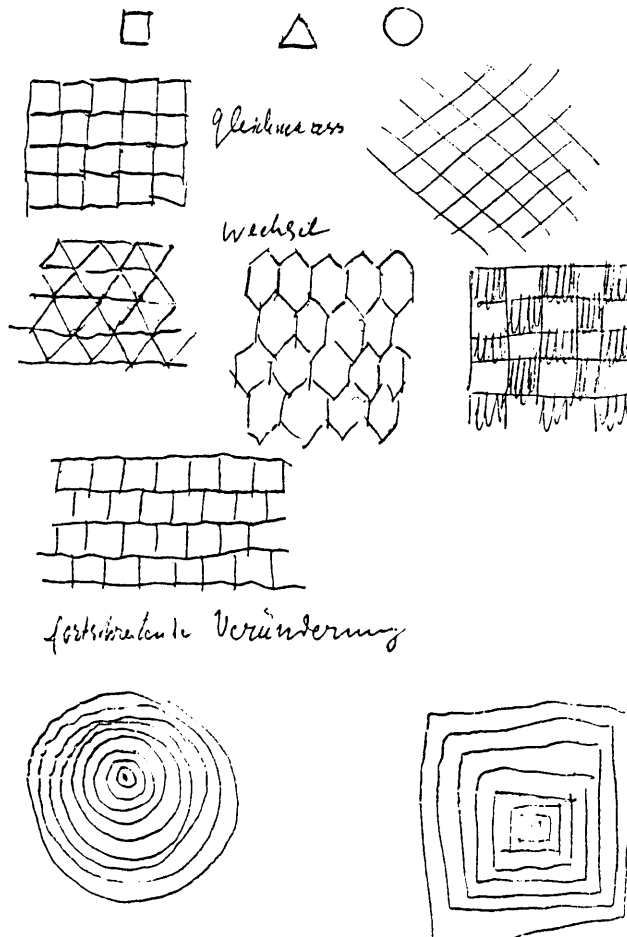
Basic possibilities
of structural formation
(linear-medial = planar-medial):

Uniformity

Alternation

Progressive change

From the inside out
or from the outside in



4.09

The parts and the whole

Kevin Lynch in **The Image of the City** describes three methods: 1) composition using static hierarchy of forms, 2) design based on relationships to a dominant element, and 3) organization in terms of temporal, sequence-experience patterns. The third seems to relate to and promises to offer more flexibility in form and growth over a greater range of space and time. Yet, while he offers this solution, Lynch notes its shortcomings.

Even this dynamic method, the organization of a network of formed sequences, does not yet seem ideal. The environment is still not being treated as a whole, but rather as a collection of parts (the sequence) arranged so as not to interfere with each other. Intuitively, one could imagine that there might be a way of creating a whole pattern, a pattern that would only gradually be sensed and developed by sequential experiences, reversed and interrupted as they might be. Although felt as a whole, it would not need to be a highly unified pattern with a single center or an isolating boundary. The principal quality would be sequential continuity in which each part flows from the next--a sense of interconnectedness at any level or in any direction. There would be particular zones that for any one individual would

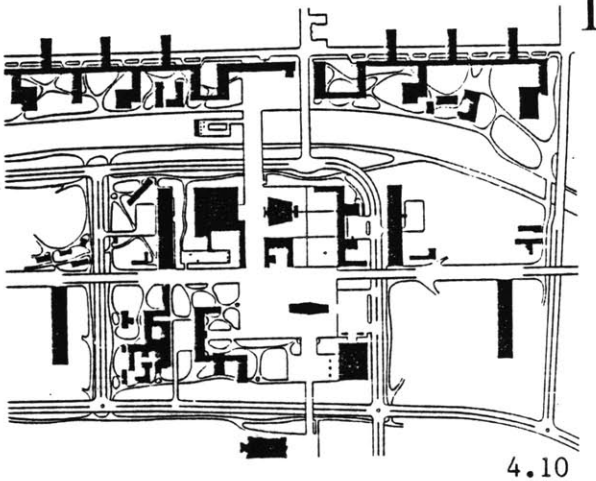
be continuous, mentally traversable in any order. This possibility is a highly speculative one: no satisfactory concrete examples come to mind.²

The key element of his thesis is the treatment of the environment as a whole and continuous entity. The observer may experience parts of the whole in perceivable sequences, single images, or reversals, but would still understand the basic structure and organization. Differences within each perception would be treated as part of the continuity.

This method suggests investigation of the following as formal elements for projection: orientation within varying levels, directional spaces, and varying zones. Passages which incorporate these elements would lend more information about the organization of a place.

²Kevin Lynch, **The Image of the City**. Cambridge: MIT Press, 1960. p. 114.

The parts and the whole: some planning theories



The relationship sought by Lynch is described in the work of Fumihiko Maki in 1961 in **Investigations in Collective Form**. Maki studies three typologies of collective form: 1) compositional form; 2) mega-structure; and 3) group-form. He singles out the group-form or sequential approach as a generative method for projective design of elements in space to give a coherent understanding to an extensive organization. The factors that determine the spatial organization of towns are:

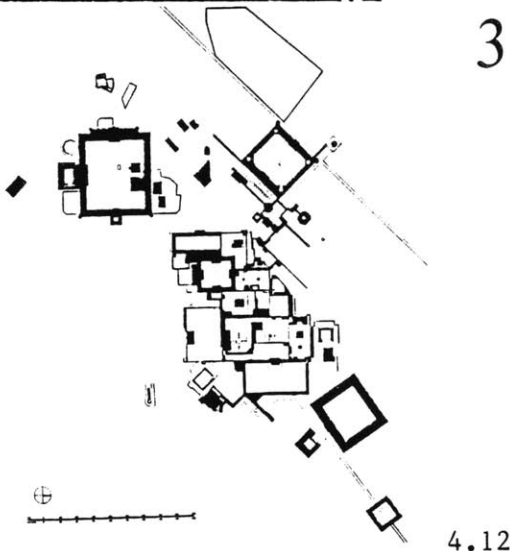


1) Consistant use of basic materials and construction methods as well as spontaneous, but minor, variations in physical expression.

2) Wise, and often dramatic use of geography and topography.

3) Human scale preserved throughout the town. (This is frequently in contrast to superhuman landforms.)

4) Finally, sequential development of basic elements, which predominantly are dwelling houses, and the repetitive use of certain visual elements such as walls, gates towers, waters, etc. The idea of sequential development has been recently explicated by Professor Roger Montgomery of Washington



The parts and the whole

University, who sees the series of buildings or elements without apparent beginning or end as a contemporary compositional "theme" distinct from the closed composition of forms which characterizes classic or axial "themes".³

The elements noted by Maki develop recognizable form by their consistent association with use, size, and reciprocity with nature. Repetition and sequence of development lead to an open-ended design process allowing for growth and addition to density of distance. Maki questions connections of the individual to the whole and hypothesizes that regionalism or regional expression at a collective scale will be a major focus for planning study. He also suggests that the primary regional character will come from the grain of the study.

In *Studies on Linkage* and the connection between the parts and the whole, Maki arrives at five

operational categories which aid the designer in establishing and structuring group forms:

1. To mediate: connect with intermediate elements or imply connection by spaces that demonstrate the cohesion of masses around them.
2. To define: To surround a site with a wall or any physical barrier, thus set it off from its environs.
3. To repeat: To link by introducing one common factor in each of the dispersed parts of a design, or of an existing situation. That common factor may be formal or material or even functional-historical.
4. To make a sequential path: To arrange buildings or parts of multi-use buildings in a sequence of useful activity. Further, to reinforce such a path by means necessary to propel persons along a general, designated path in the natural landscape which will catalyze and give direction to new development along its course.
5. To select: To establish unity in advance of the design process by choice of site.⁴

³Fumihiko Maki, *Investigations in Collective Form*. St. Louis: The School of Architecture, Washington University, 1961, p.16.

⁴Ibid., pp. 37-43.

How are these mediated linkages constricted in physical reality? What factors are used to mediate between old and new? How do we use definitions of walls or barriers to make connections rather than separations? Repetition seems to be the easiest and most prevalent followed in general construction of housing today. How is repetition introduced so as to allow room for interpretation? These are the questions that come to mind when examining Maki's methodology. The typology studies in the second part of this chapter and design exercise in chapter five will examine a few of the strategies that have been used to define linkages.

Philip Thiel's study of Japanese garden structures and the use of borrowed landscape elements as orienting devices may serve as another paradigm for the organization of parts in relation to an understanding of the whole. He concludes:

To generalize, the principle underlying the perceptual organization of these gardens might be said to be that of a network of sequences using a sequentially-experienced integrating element to establish interconnectedness. In the case of the examples cited, the integrating element is level open space, by means of which the relationships of a number of intermediate parts may be grasped.

One might speculate that over large urban regions it would be possible for this integrating element to change type. For instance, it might alternate in a figure ground reversal situation; from the case of small differentiated districts embedded in a larger open matrix to small open spaces embedded in a larger matrix of contiguous differentiated districts. Or, the sequence integrating element in the latter case might take the form of occasional elevated overlook points. In this way the pattern of the integrating elements themselves may constitute an organizing factor on a higher level and at a larger scale.⁵

⁵ Philip Thiel, "The Problem of Sequential Connectedness in the Urban Environment", in **Urban Planning and Development Series**. St. Louis: Department of Urban Planning, University of Washington, St. Louis, p. 4.

The parts and the whole

The factor that establishes interconnectedness in this theory is a sequential experiential system of paths. Acknowledged patterns of small and large open spaces may serve as reference points. Also the height of overlook positions may set up a second system of reference at a different level and may contribute definition at a larger scale. These images coincide with Gordon Cullen's perceptions of "here" and "there."⁶

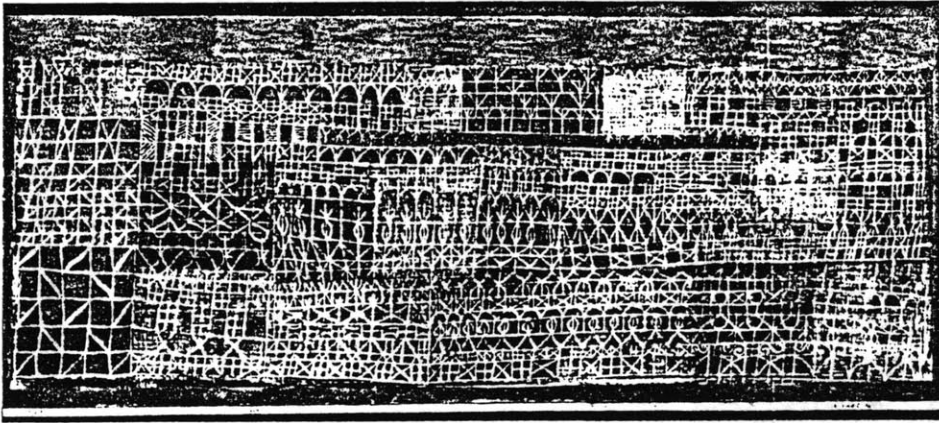
Taken together, Thiel's, Lynch's, and Maki's theories provide a framework for reciprocal relationship. Each of these theories develops the concept of a field type organization where associative recognition patterns determine our orientation. The view of one part or a series of parts lends information which is not inconsistent with the general organization. Through the parts, we develop a coherent understanding

of the whole. In each of these theories, the organizations are based on common factors.

Recognizable patterns are singled out as orienting devices.

The following section investigates some of the issues raised in the generation of collective forms which allow for a variety of interpretations at varying levels of scale. The focus is on the forms of organization and information which may be transmitted about the structure and organization of a place through movement and passage through the building forms.

⁶Gordon Cullen, **The Concise Townscape**. New York: Van Nostrand Reinhold Co., 1980.



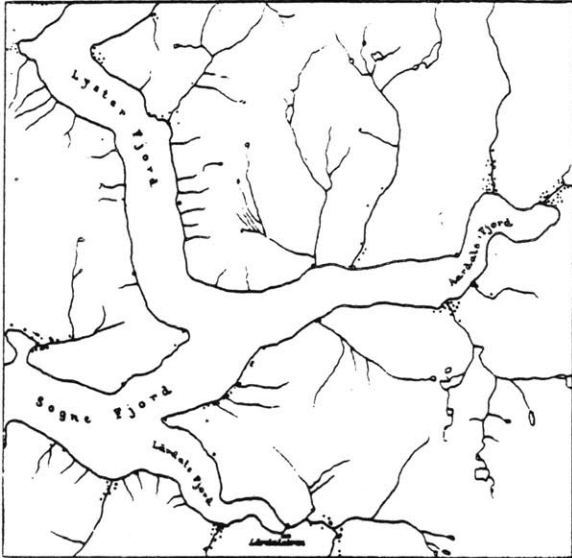
4.13

TYPOLGY

Typologies of architectural territories exhibit a transition to greater reciprocity within space and time. Three typologies of movement system are: 1) room to room, through direct access from containment to containment; 2) the corridor scheme, which allows movement alongside of rooms; and 3) the field organization, which uses territories of the forms of buildings to generate the passage.

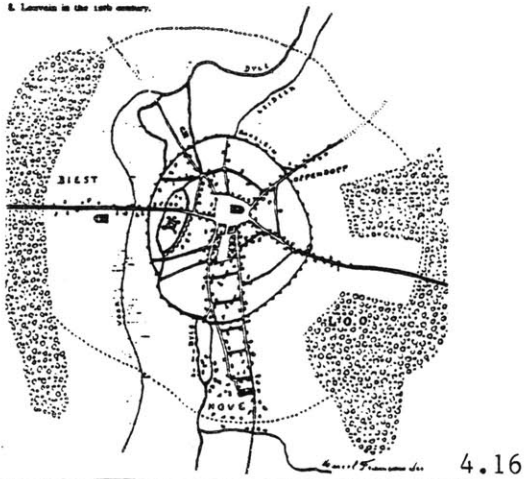
Central to the perception of spatial territories generated by the forms is the concept of the zone in which the object or access system is located. Passage and the incorporation of motion generate a direction. This sense of direction is contained to one zone or is shared by parallel zones. The following examples and diagrams demonstrate those principles.

The following typology studies examine the forms of passage at city (village), street, and building size.



Fjord settlements in the interior
of the Sogne Fjord. 4.15

6. Louvain in the 16th century.



Plan of Louvain in the 16th century. After Ludovico Guicciardini.



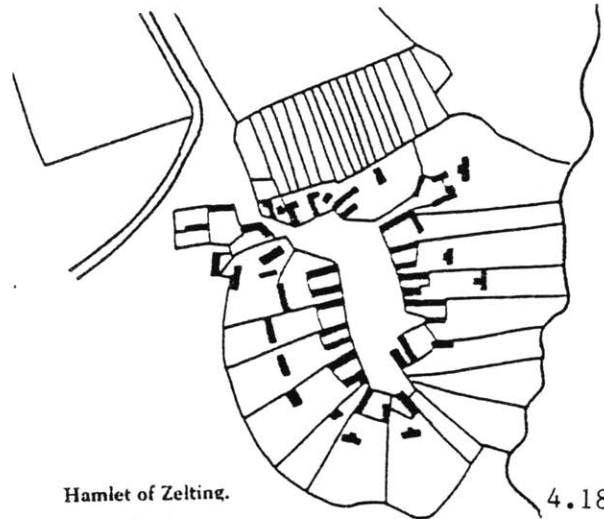
4.17

Room to room

The clustering of buildings for defense led to the growth of the circular form in the development of the city. Growth was often in concentric rings, as exemplified in the early Middle Ages village of Louvain, Belgium and the hamlets of Zelting and Sichelendorf in the Styria Province of Austria. A secondary system of passages often formed directional routes through or between the ring systems.

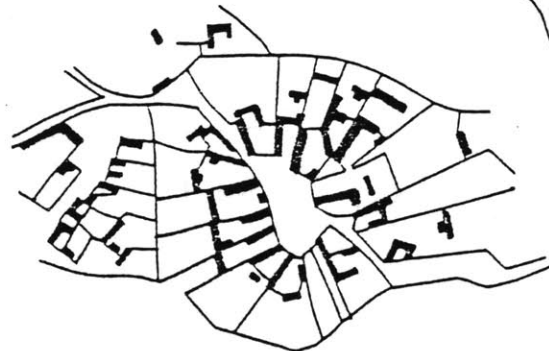
In these cities, the movement is from inner room to outer room in concentric order. This is one form of room to room sequence. The territorial control of the central position intensifies the center as an activity node.

Orientation was often found through markers or objects within the systems of the circle. In Carcassonne, the towers mark a positive reference frame.



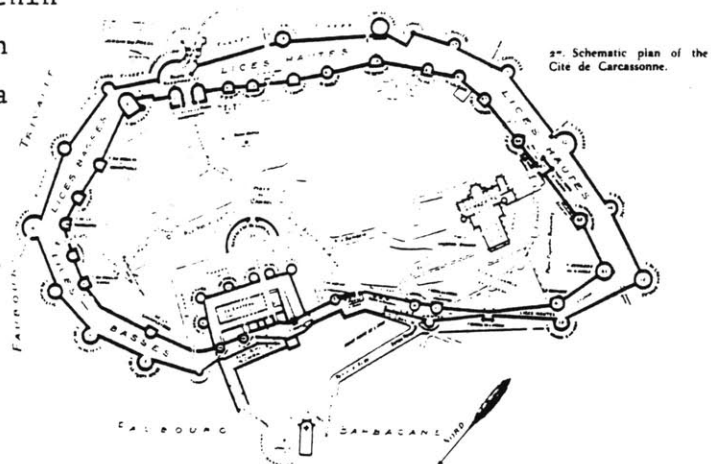
Hamlet of Zelting.

4.18



Hamlet of Sichelendorf.

4.19



2°. Schematic plan of the Cité de Carcassonne.

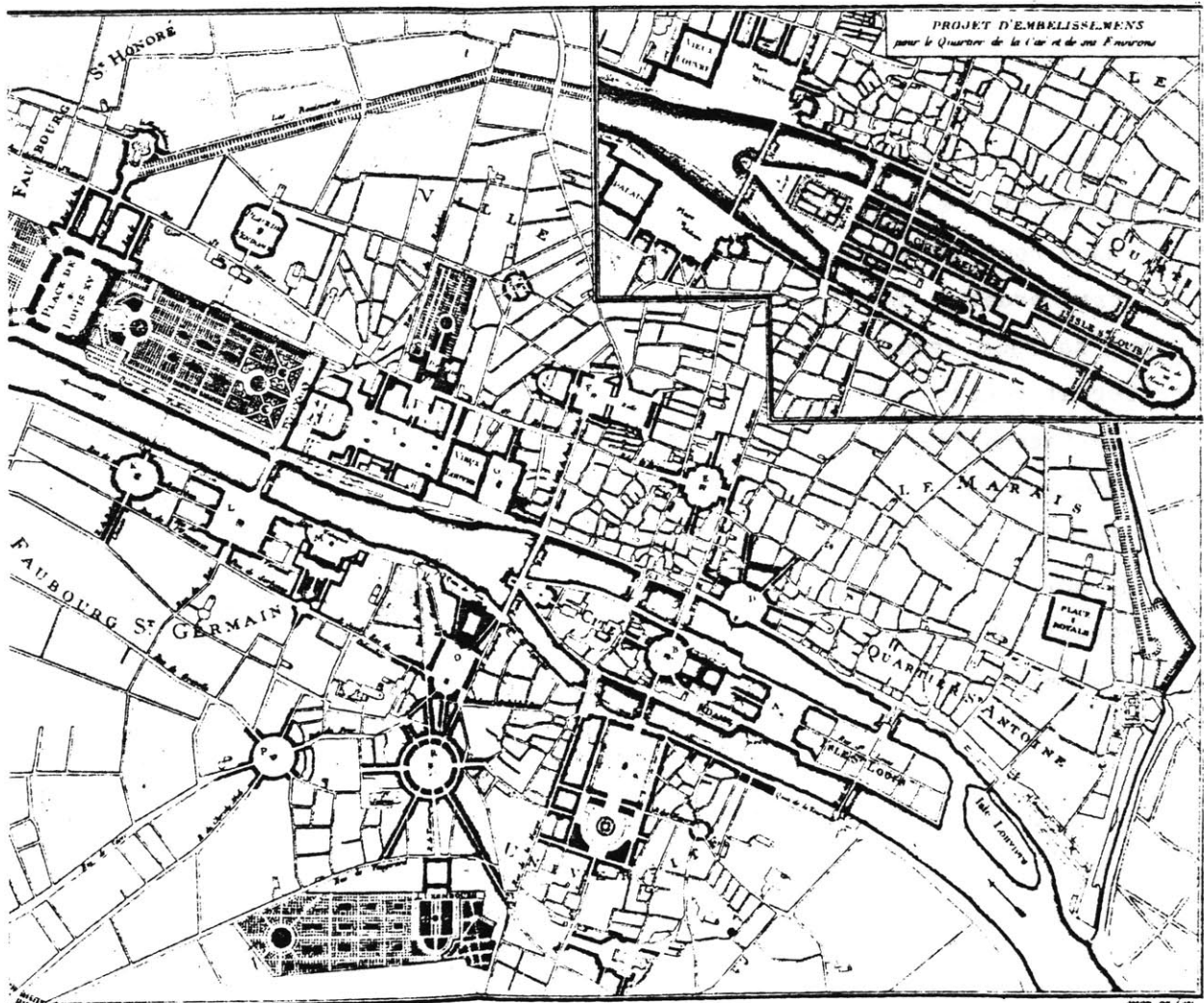
4.20

The parts and the whole

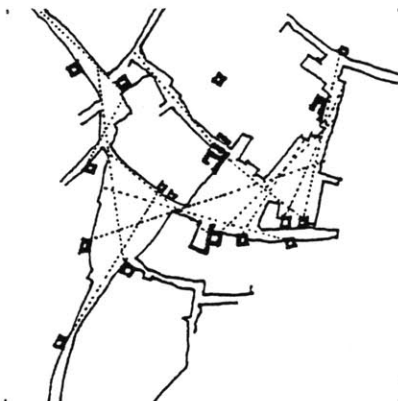
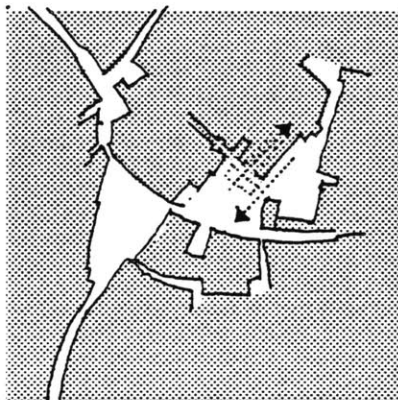
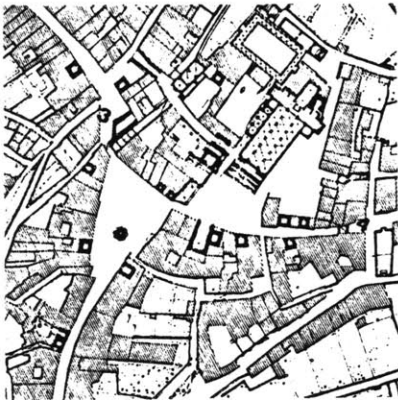
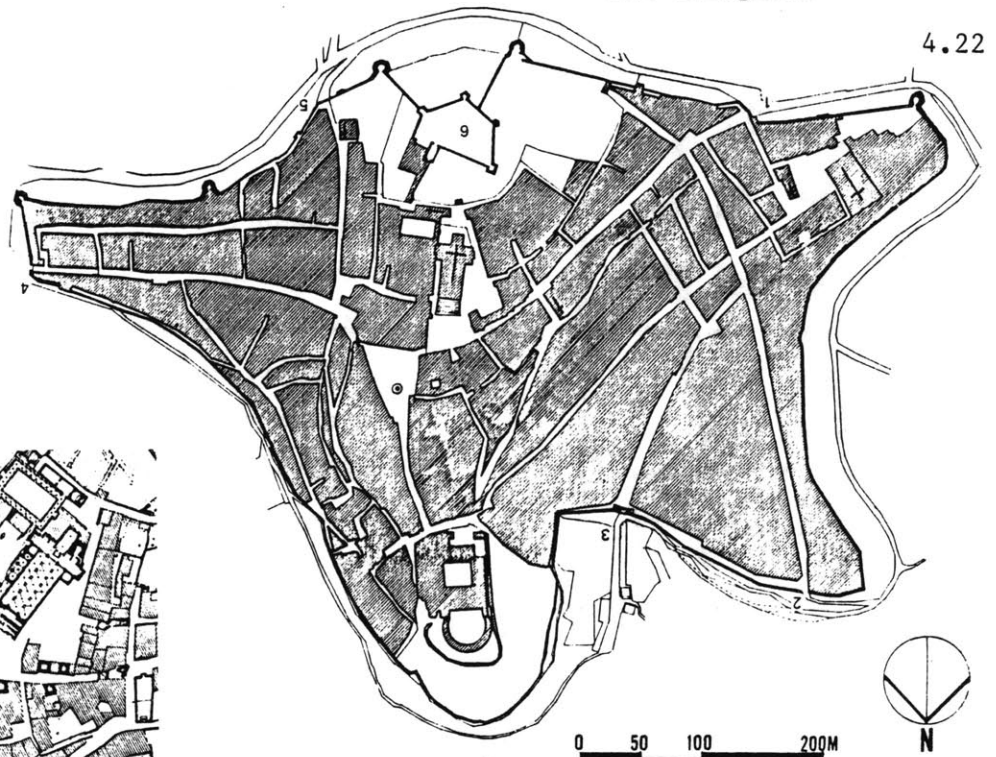
Paris

In this proposal for Paris, the circles mark orienting space in the urban fabric. For the squares and circles in Paris, movement is from one room towards another. The corridor form ties the rooms together.

4.21



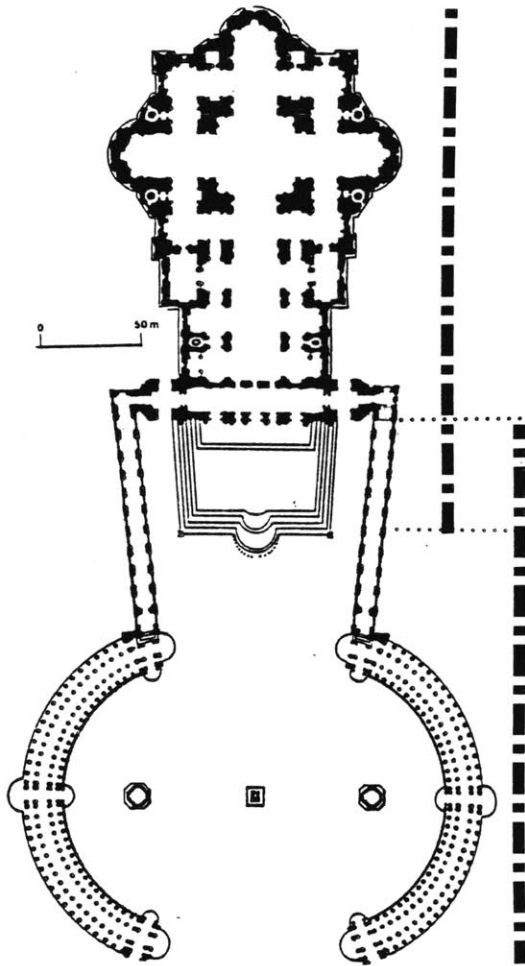
Typology: Room to Room
San Gimignano



San Gimignano is a medieval village in Tuscany. The organization of the main public space is established as a room to room sequence.

Reciprocal and parallel association is exhibited with the dimension and direction of the main interior public space: the church.

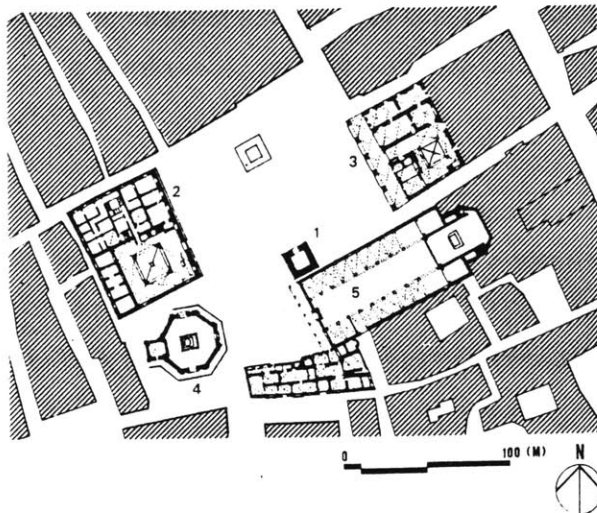
The edges of these public spaces are further intensified by the towers which establish territorial control over and through the major connecting spaces and streets. These towers act as a second reference system which may be used to guide one through the town.



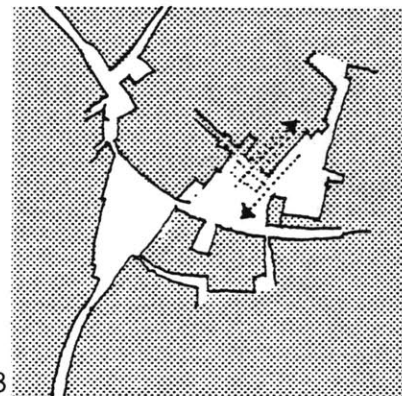
4.26

Larger buildings on the public scale help make the transition between the city and the building dimension. The extension of St. Peter's and the collonade projection into the city fabric are dimensionally equivalent. The stairs, the transitional space between inside and out, are built on the overlapping territory.

A similar transition is made in the plazas and cathedrals of San Gimignano and Pistoia. Here, the space of the plaza continues along the edge of the building, creating a greater sense of reciprocity with the continuity of passage.

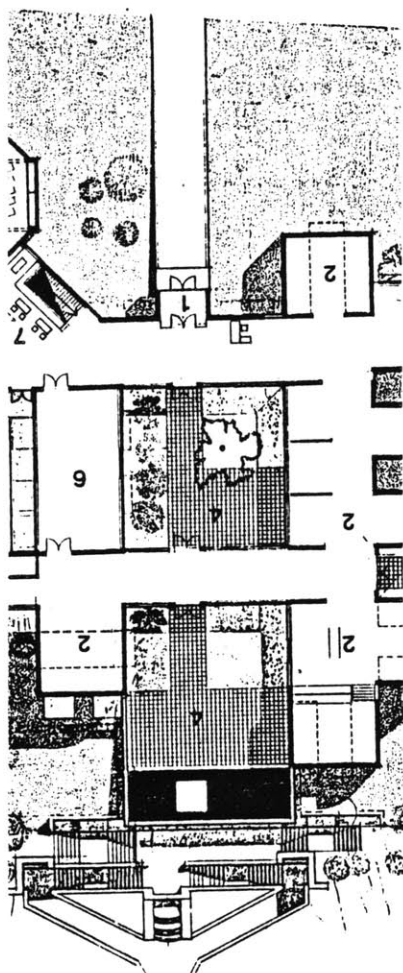


4.27



4.28

Miro Foundation

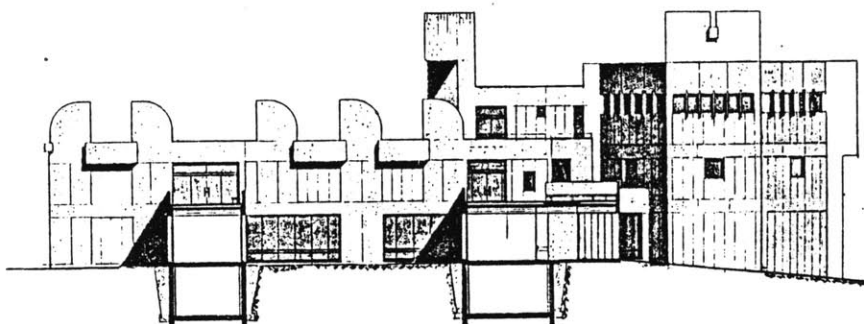


4.29

The Miro Foundation in Barcelona by Sert establishes reciprocity with the landscape through the alternation of light and dark. Exhibition rooms alternate with views out into the garden.

The entry sequence is from mountain to room to city. The first transition is from the outer courtyard room, defined by the slope of Mont Juic and the two projecting wings, through a glass corridor to a totally enclosed courtyard.

The second transition is through a similar glass corridor to a platform terrace, repeating the form of the courtyard. This terrace directly overlooks the entire city of Barcelona. The reciprocal relationship of passage is established at both the level of the city and the room.



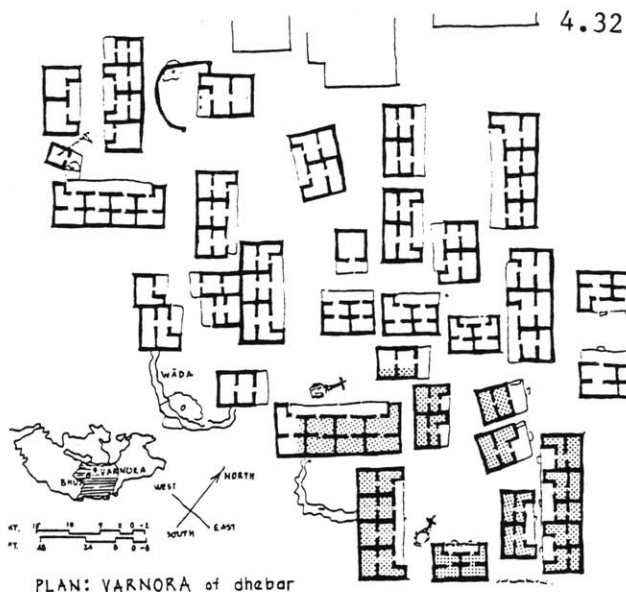
4.30

SECTION B-B



Varnora and Chobari

The form exemplified in the Miro Foundation mirrors the form of passage found in many vernacular villages. A similar attitude towards light and passage between forms of closure is seen in these two South Asian villages.



Habraken and Pompeii

Repetitions of similar forms are found in the **Variations** studies of urban tissue by John Habraken.⁷ Pompeii can be seen as an example for the application of his principles. Close observation of varying houseforms of Pompeii reveal the unit to be based primarily on the courtyard type. Variations of this type are evident in each house. Streets, the primary route of access, are corridors which connect the houses.

The secondary route of passage, the courtyard, is often as wide as the street and serves as a reference zone for all occupants within the smaller organization. The central focus of the courtyard type contributes to the cellular form of organization of courtyard houses in relation to each other. Passage is the experience between the cells and where access is permitted inside the courtyard space; from the street, inside and out share associations and territorial control.

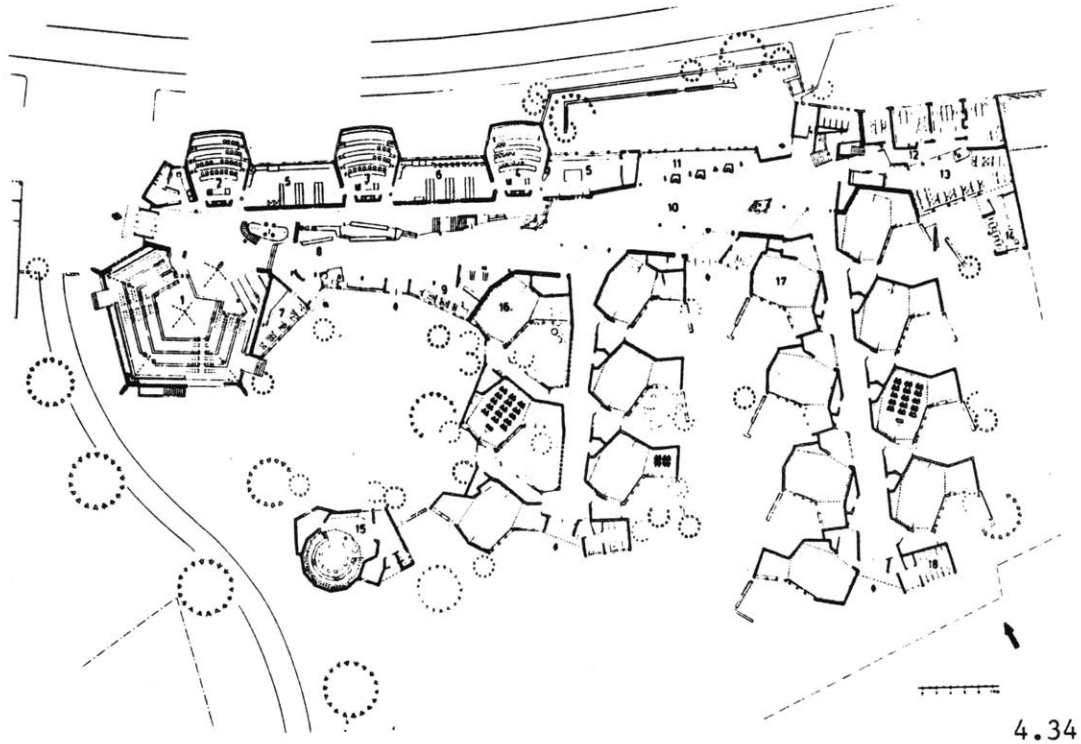
Within this system of primary and secondary access, the forms of

the rooms and corridors of the private house hold many variations. The forms of passage at this level are the most variable over time. Rooms may be expanded and connections between houses may be built or closed, thereby changing the territory of the household. This type of transition does not,

however, change the territorial control of forms at the street size. In Pompeii, which exhibits a high degree of packing of territories, once the reference frame is established, changes at the building size do not often alter the larger organization of the street.



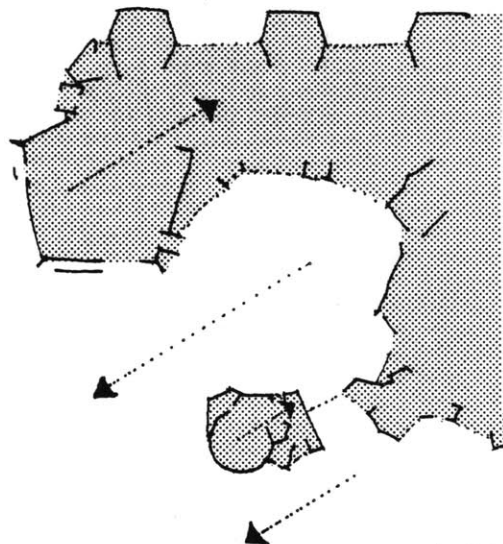
The parts and the whole

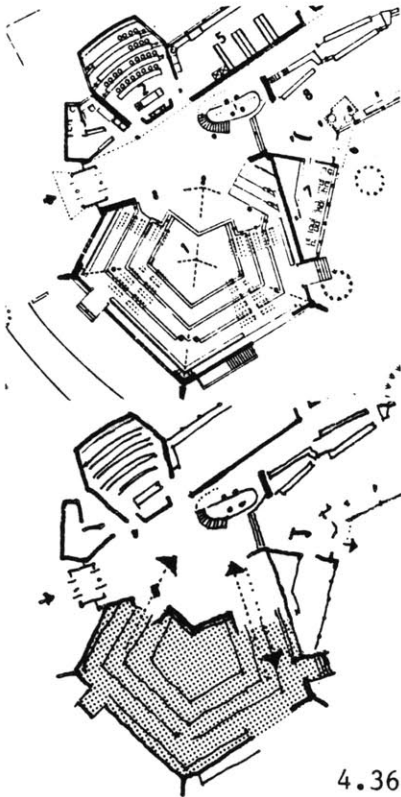


Geschwister Scholl

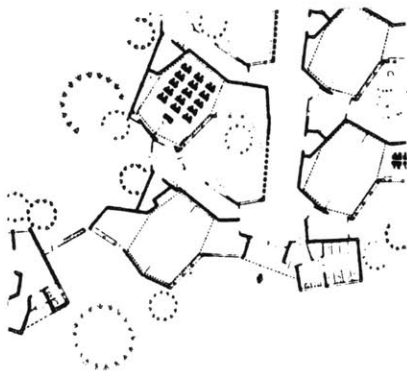
In the Geschwister Scholl school at Lunen, Westphalia by Hans Scharoun, the exchange of territory is established at both the site size and within the room size. The room and exterior sequence are set up in parallel zones.

A direct room to room sequence is experienced between auditorium, lobby and classroom. By varying the degree of closure, three distinct zones of privacy are established.





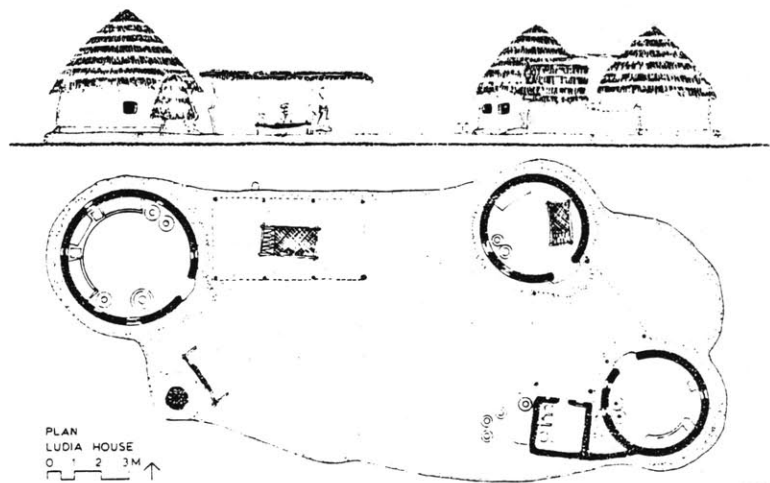
4.36



4.37

Ludia Village

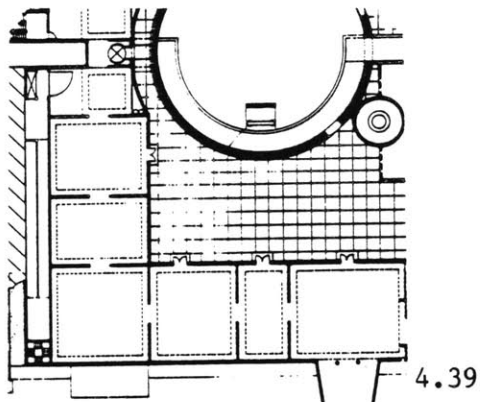
A similar sequence of association is seen in the Ludia village openings, facing each other to establish continuity of passage and ownership. The exterior space between the circular forms is within their territorial control. It allows passage between, yet invites interaction with other elements adjacent to it.



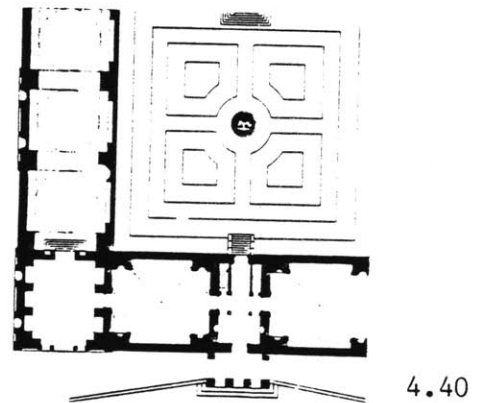
4.38

The parts and the whole

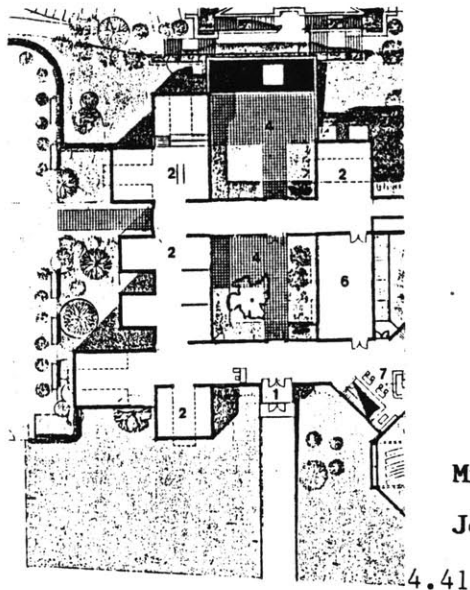
These forms exemplify the room to room sequence. Each demonstrates variations in the transition of corners while maintaining associations with larger orienting spaces.



Staatsgalerie Extension and Chamber Theatre, Stuttgart, Germany.
James Stirling, 1977.

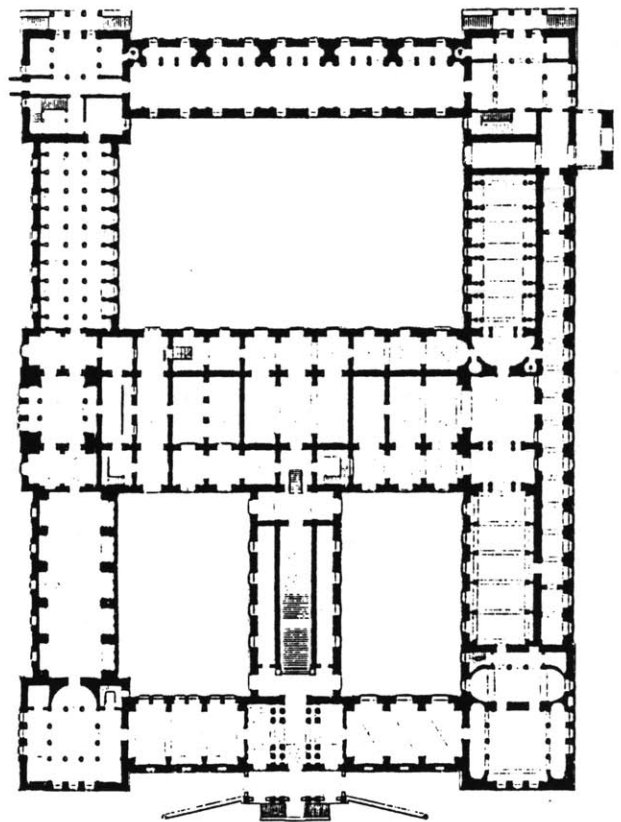
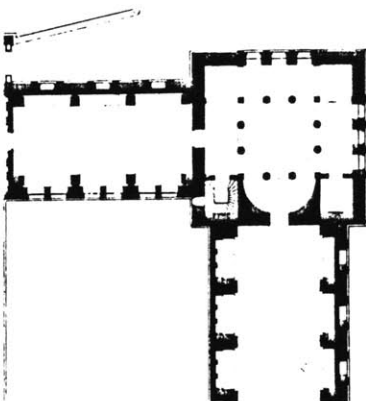
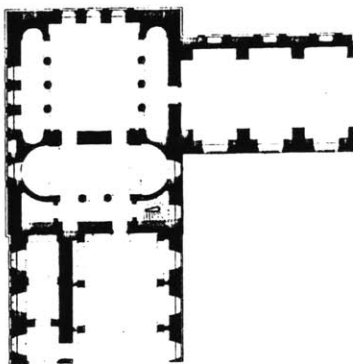
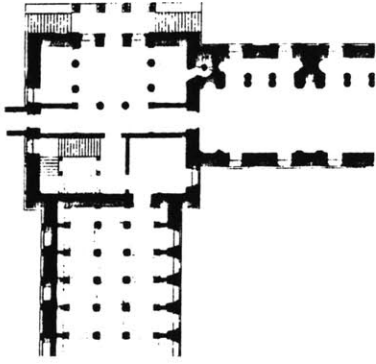


Die Glyptothek
Munich, Germany
Leo von Klenze
1815-1830.



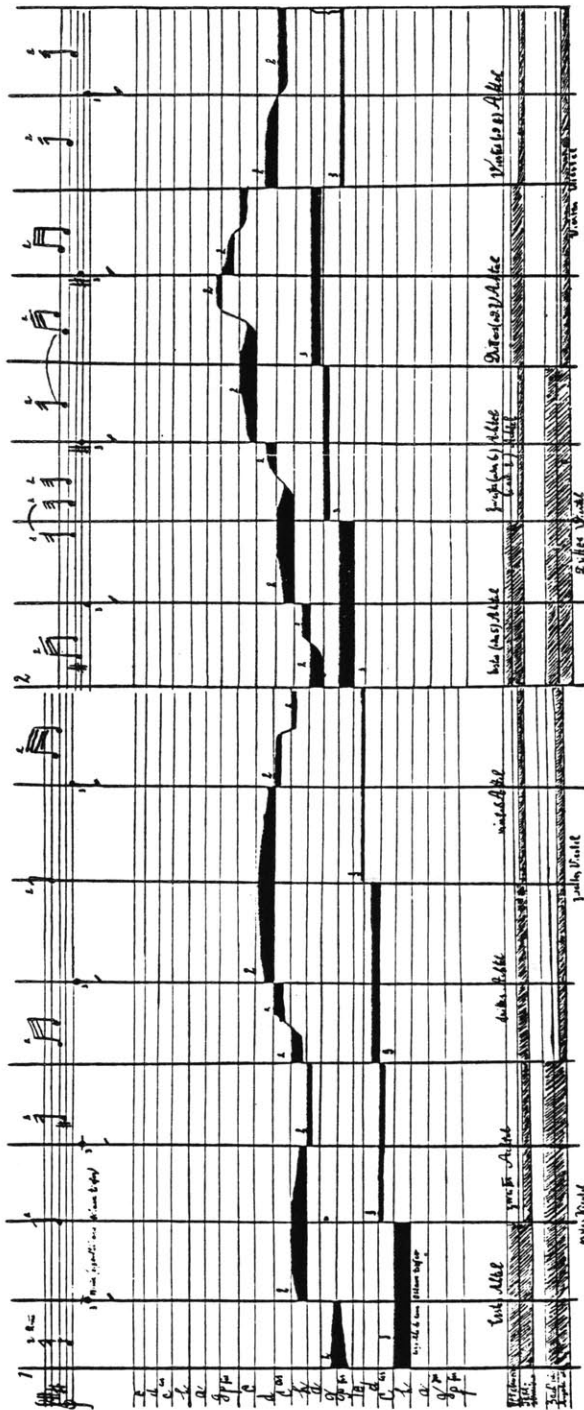
Miro Foundation
Josep-Lluís Sert

Hermitage
Leo Von Klenze

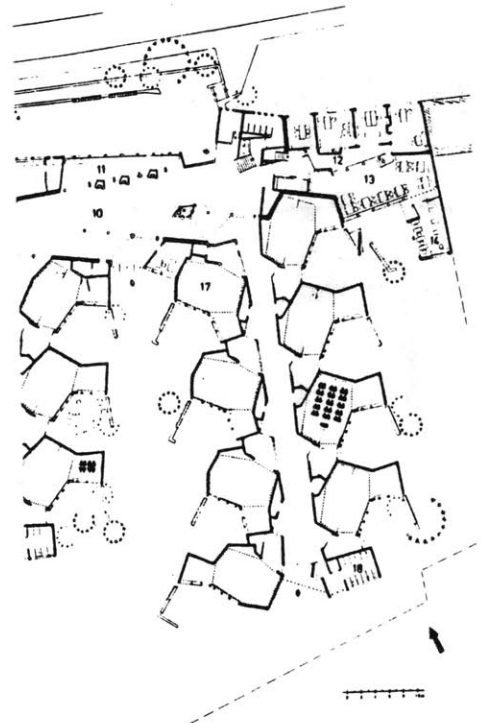


4.42

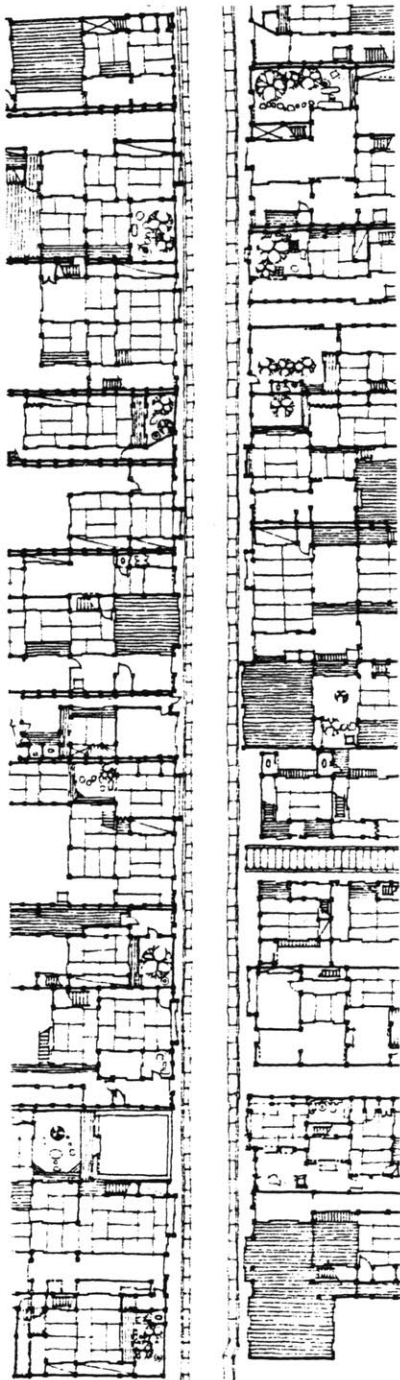
The parts and the whole



4.43

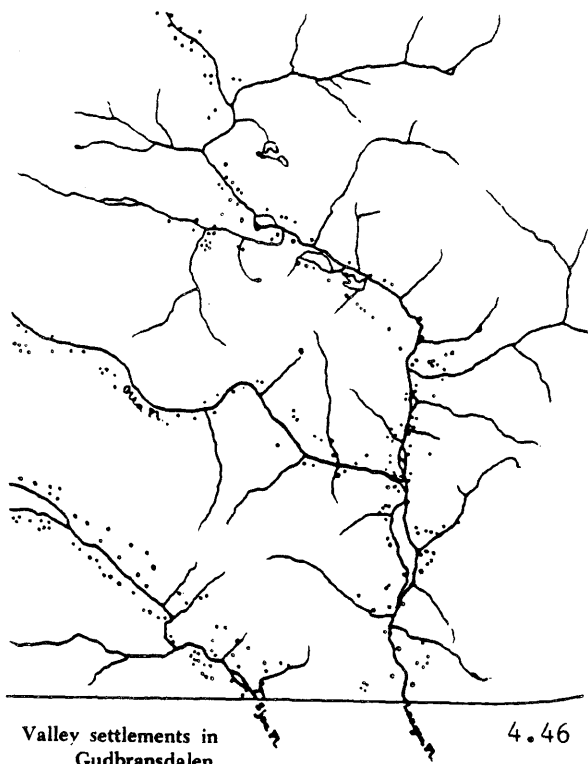


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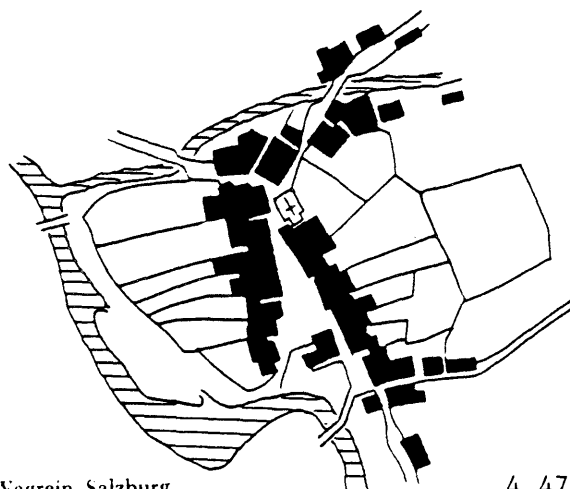
Corridor

Registration along an edge typifies the development of a directional form of passage. As growth occurs, territories define the edge with greater intensity. The packing or high density of territories along a directional zone generates the corridor. This may be a single sided or double sided sequence.



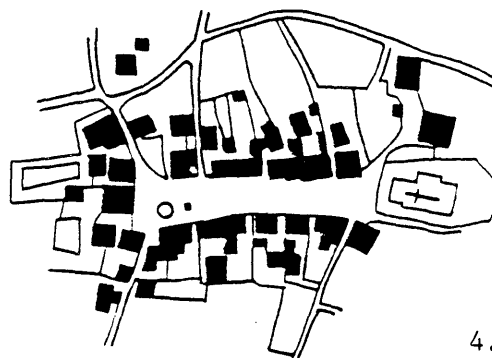
Valley settlements in
Gudbrandsdalen.

4.46



Wagrein, Salzburg.

4.47



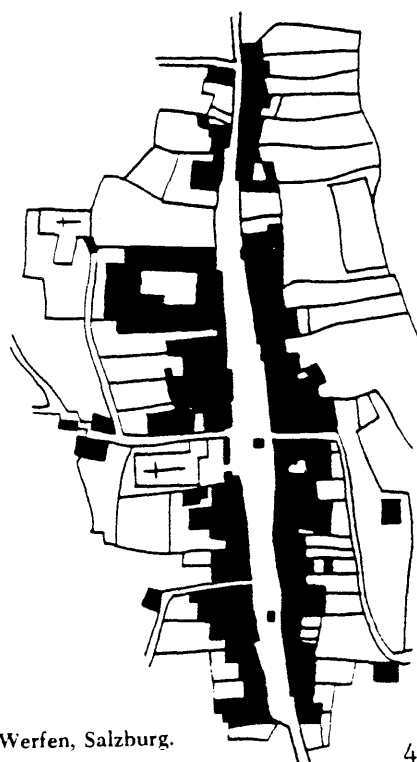
St. Veit im Pongau, Salzburg.

4.48



Strasswalchen, Salzburg.

4.49



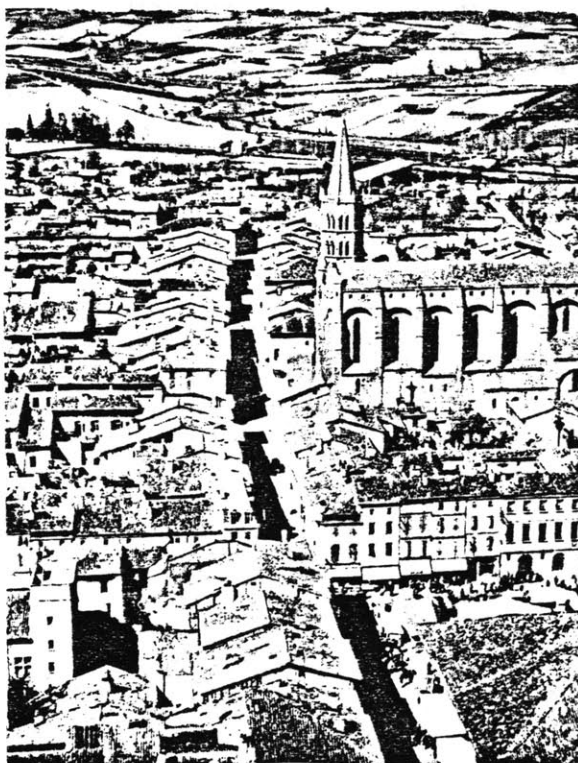
Markt Werfen, Salzburg.

4.50



Besancon

4.51



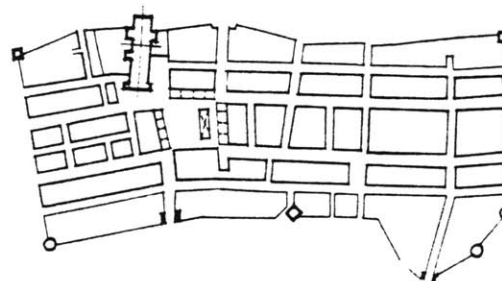
Beaumont de Lomagne

4.53



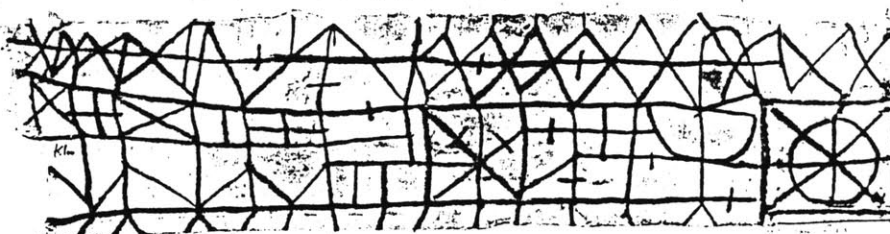
Plan of Villefranche-de-Rouergue.

4.52

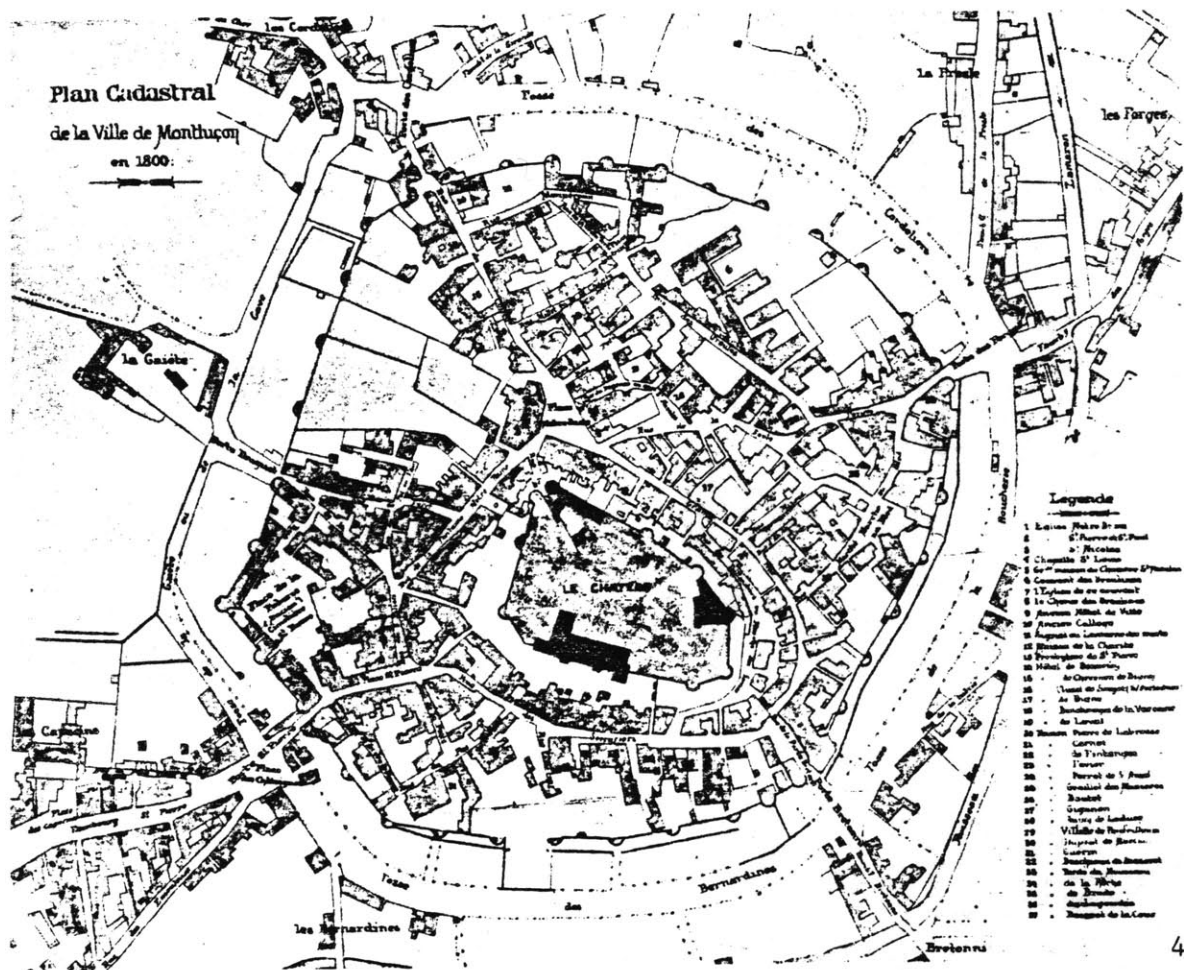


Plan of Beaumont-du-Périgord.

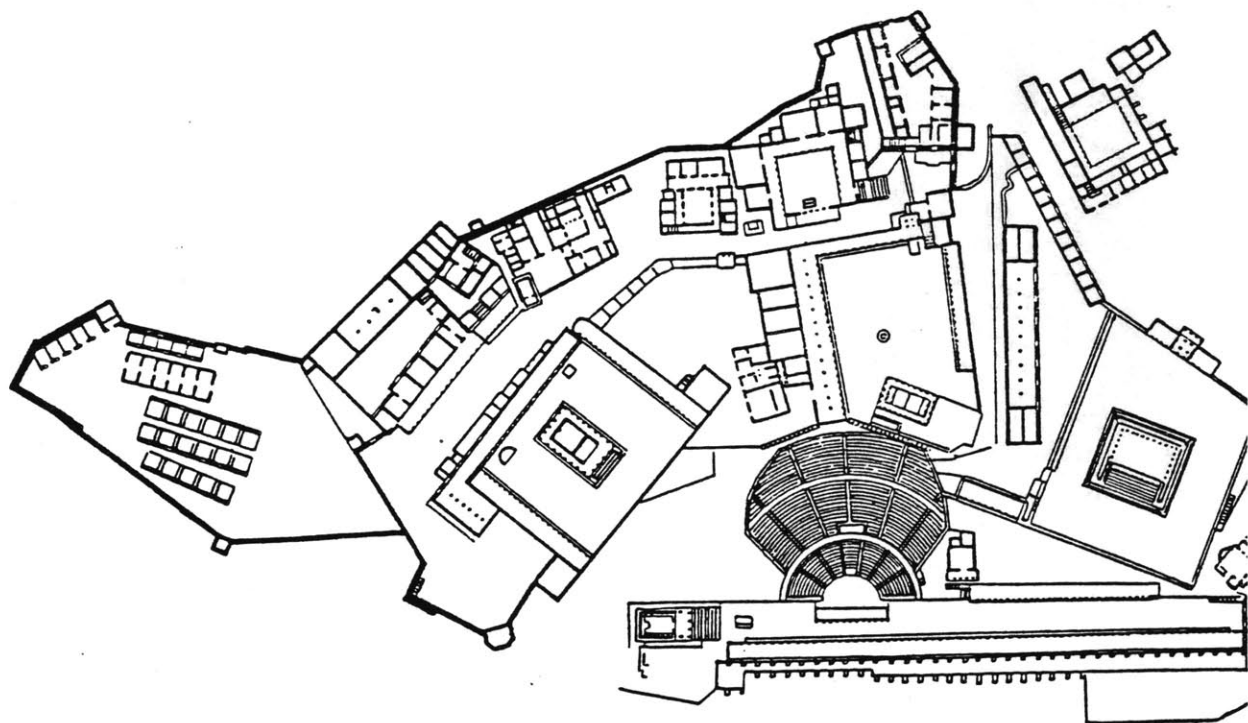
4.54



4.55

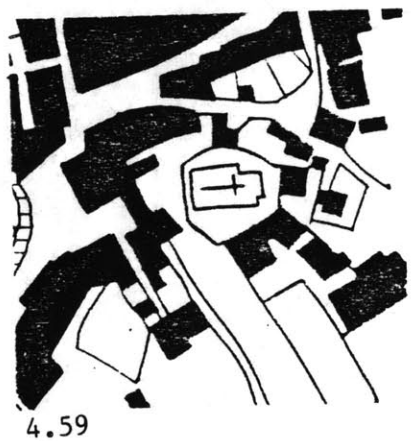
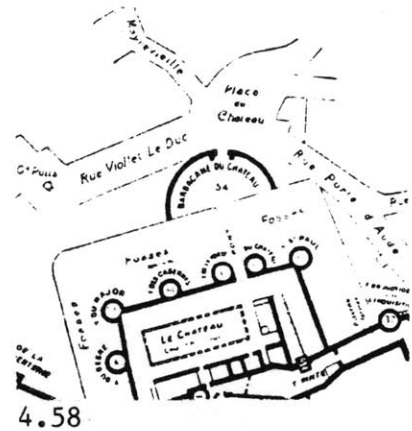


4.56

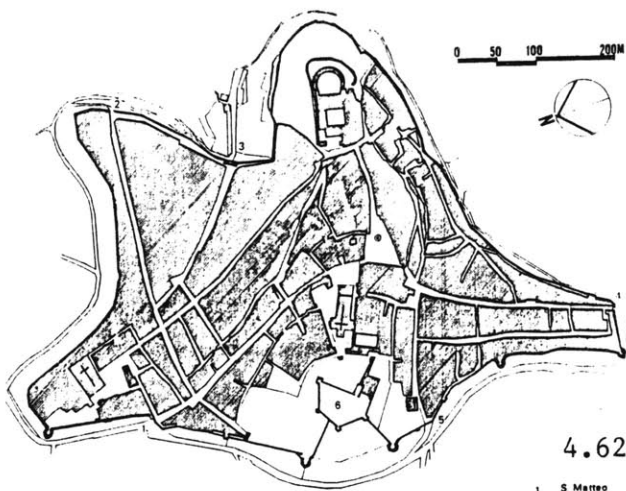


4.57

Concentric and directional systems may develop simultaneously and provide a larger reference frame than the counting of crossed grids. These circular forms project spatial forces away from them and act as registration references for larger groupings of built forms. The registration along the territory of the circular form provides orientation to these corridor sequences.

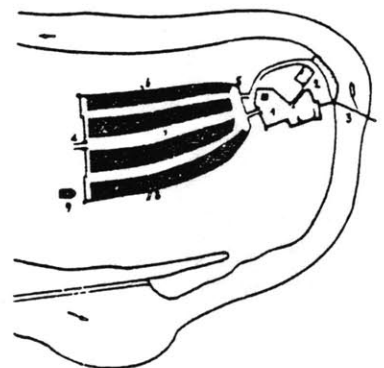


4.60

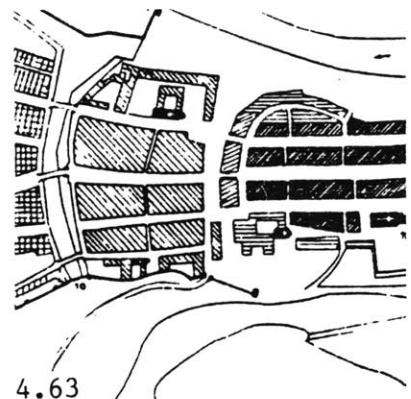


4.62

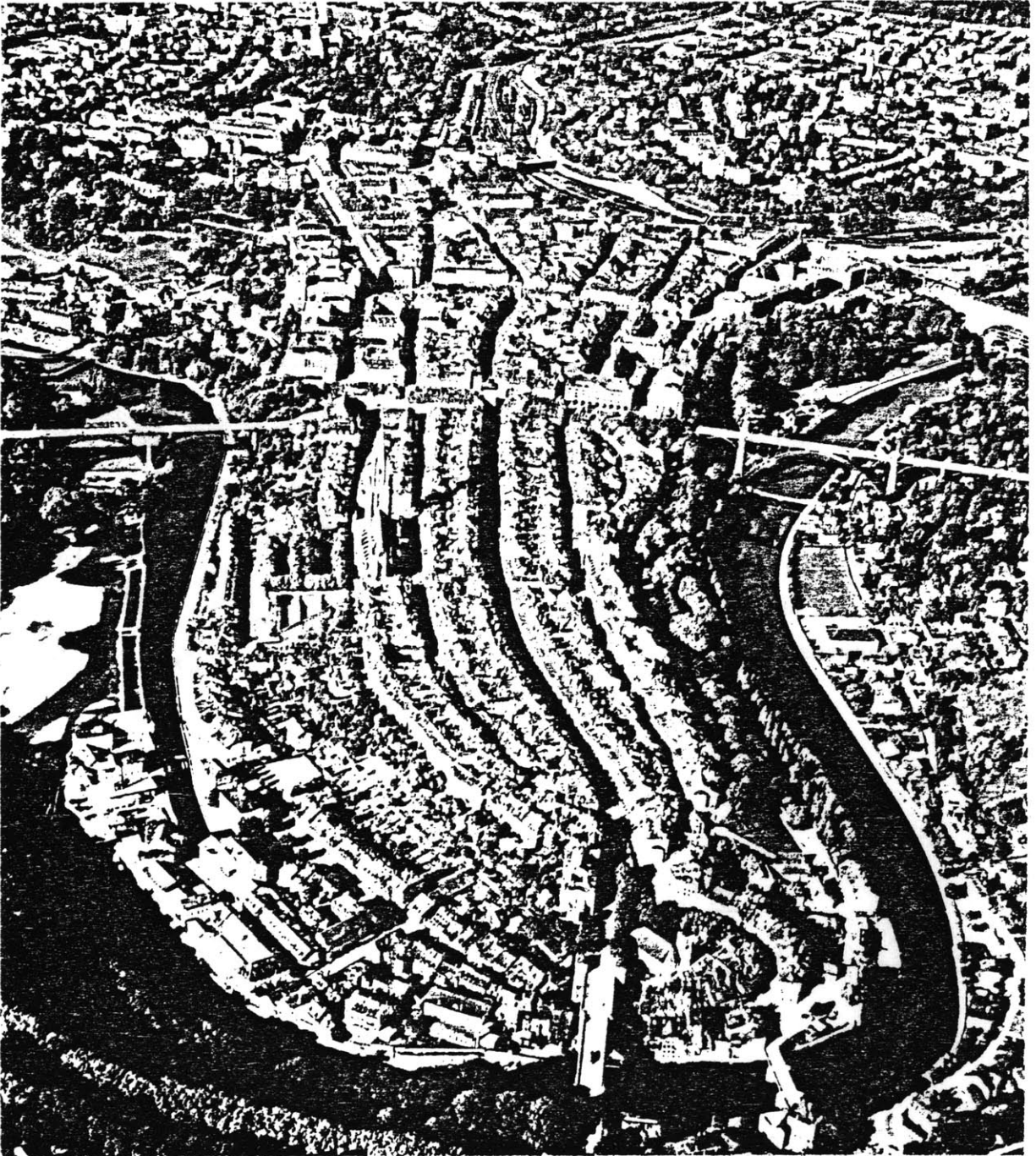
S. Matteo



4.61



4.63



4.64

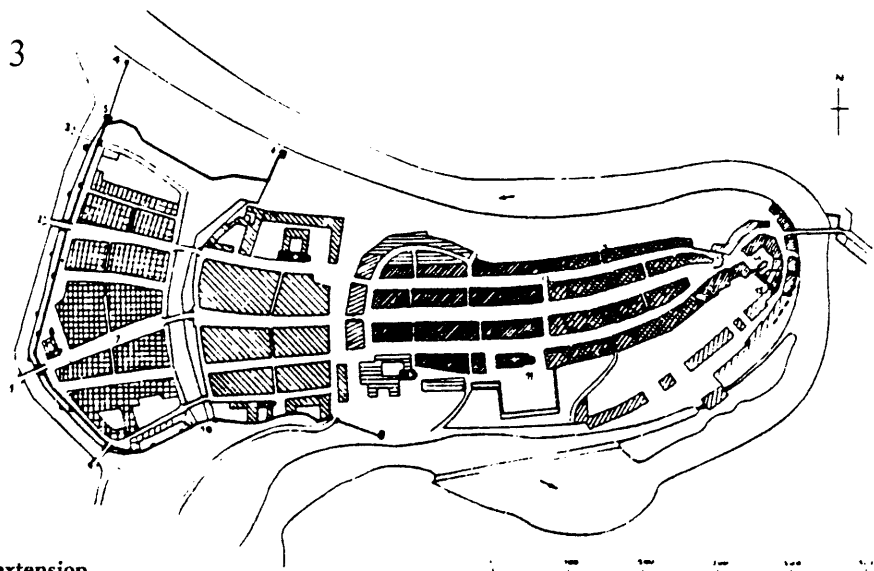
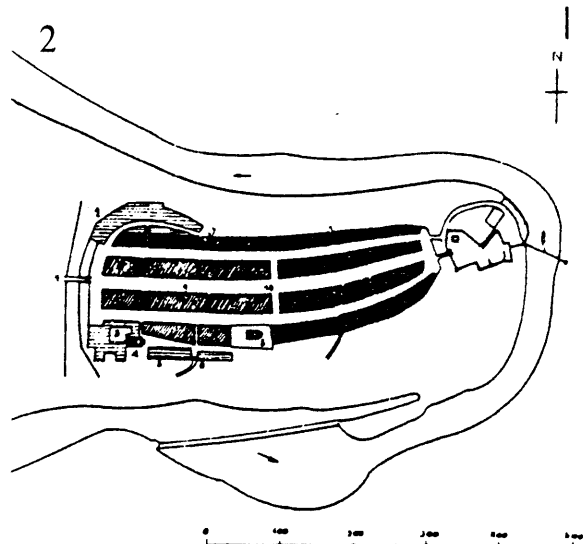
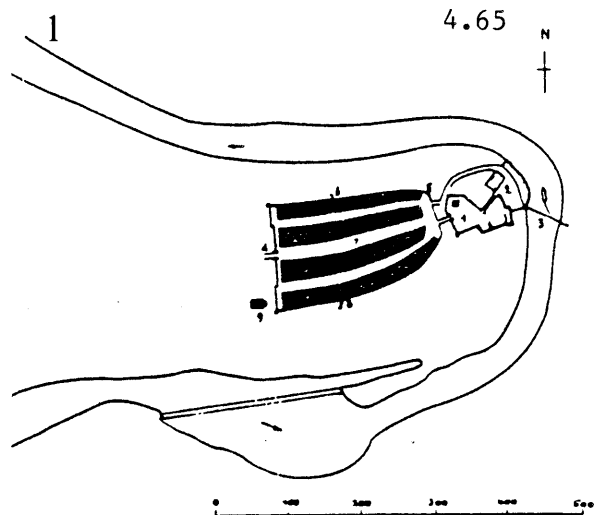
Bern

The development of Bern demonstrates the repeated use of the circular form as an organizational pattern in a directional field. Parallel corridors are given perceivable starting and end points which register off the circular configuration of buildings. These demarcate territorial transitions.

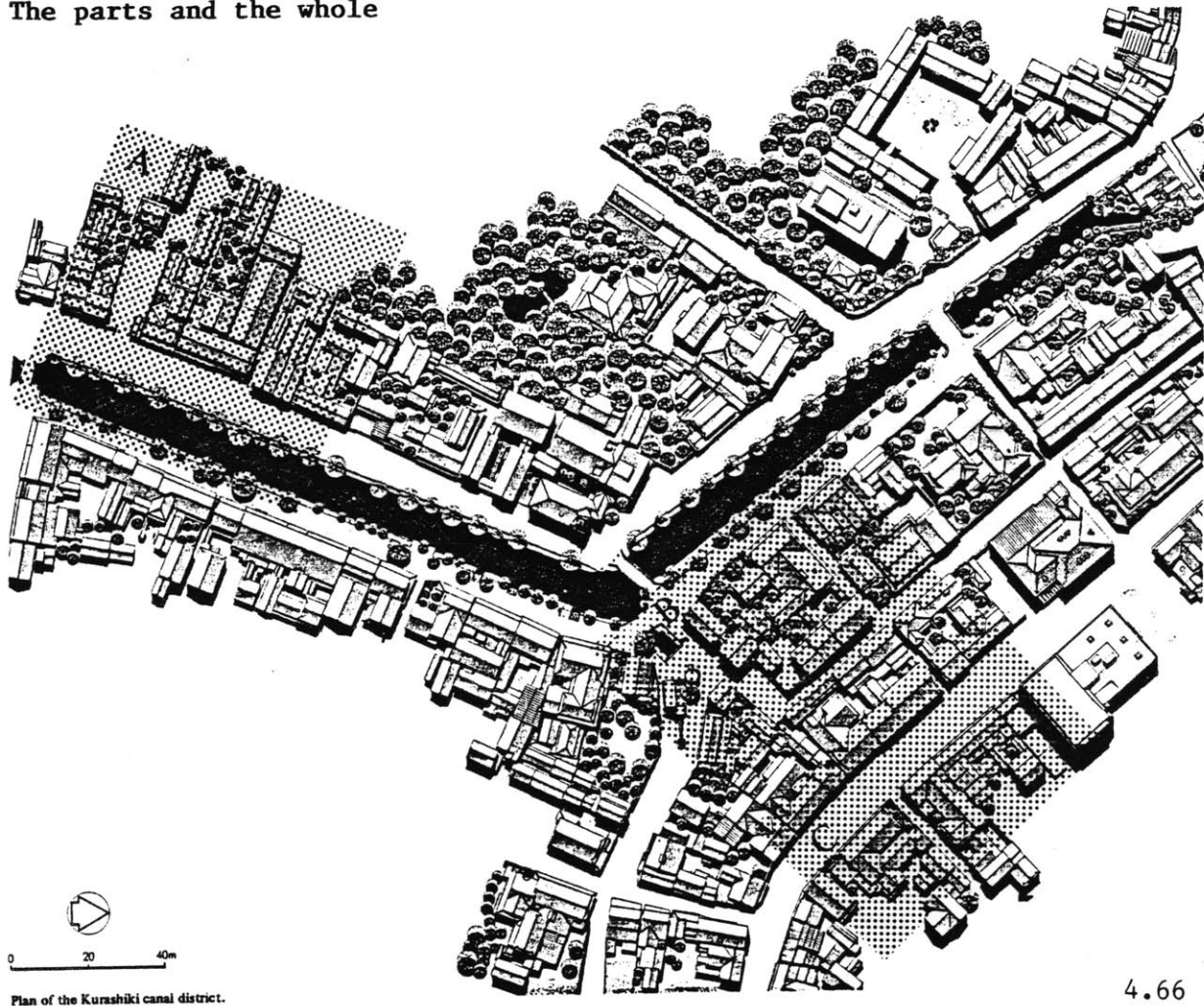
1 The first town of the Zähringer, the older *burgum*, in 1191. (1) Castle of Nydegg. (2) Riverside settlement. (3) Ferry. (4) First Western Gate. (5) Moat. (6) Fountain. (7) Main Street. (8) Southern Gate. (9) First Church.

2 Second section of the town of the Zähringer, the younger *burgum*, between 1191 and 1256. (1) Second Western Gate: *Zeitglocken*. (2-5) Streets within the western part. (6) Southern Gate. (7) Fountain. (8) Parish church. (9) Main Street. (10) Side street

3 Third town extension.



The parts and the whole



Plan of the Kurashiki canal district.

4.66

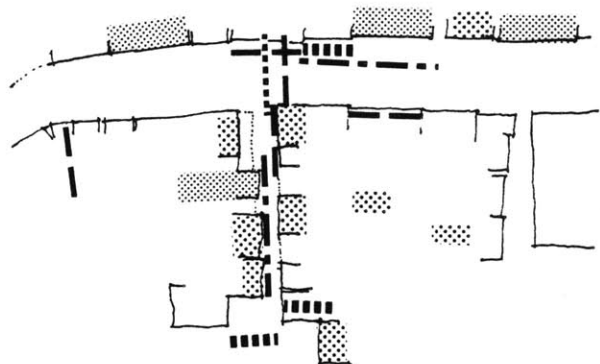
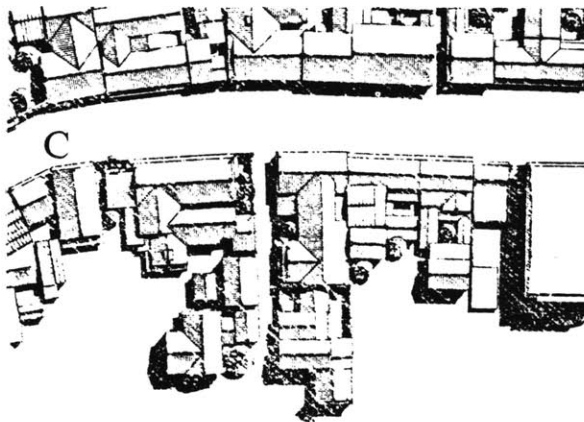
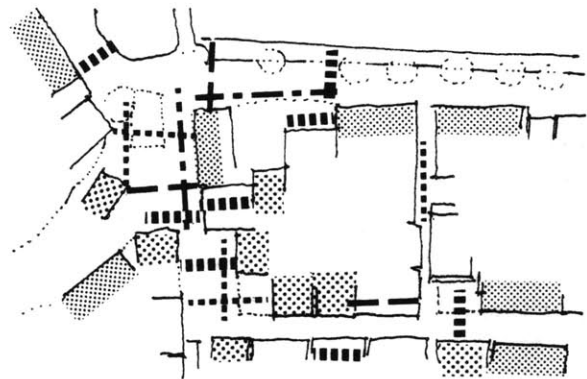
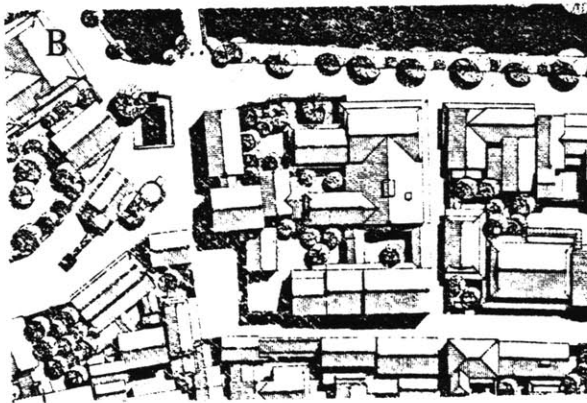
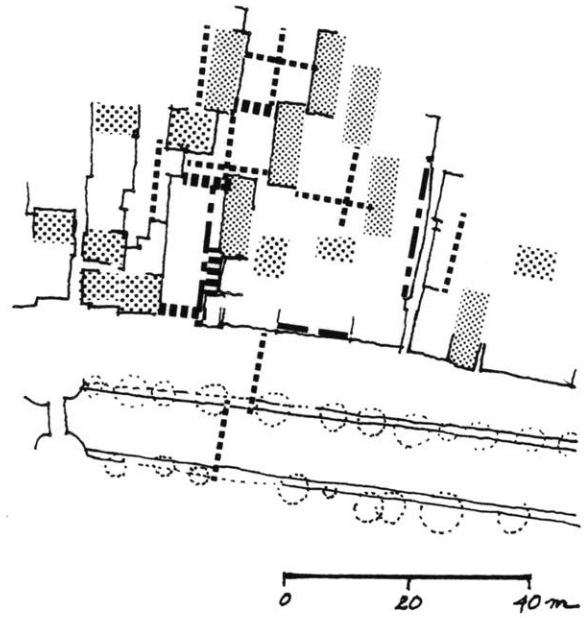
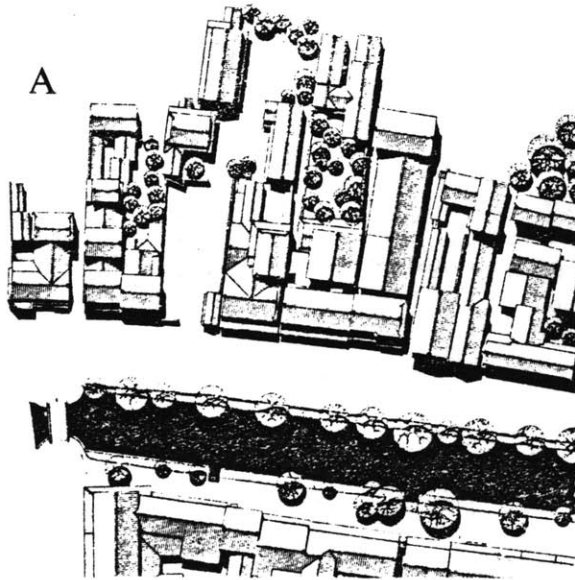
Kurashiki village

The form of the Kurashiki village is a directional system that relates to the canal. Major corridor forms run parallel to the canal. The canal served as a link to the sea until the 1900's. Storehouses combined with large sea captains' houses comprise the dimensional system of the canal district. "Kura"--which means storehouse--signifies the use of

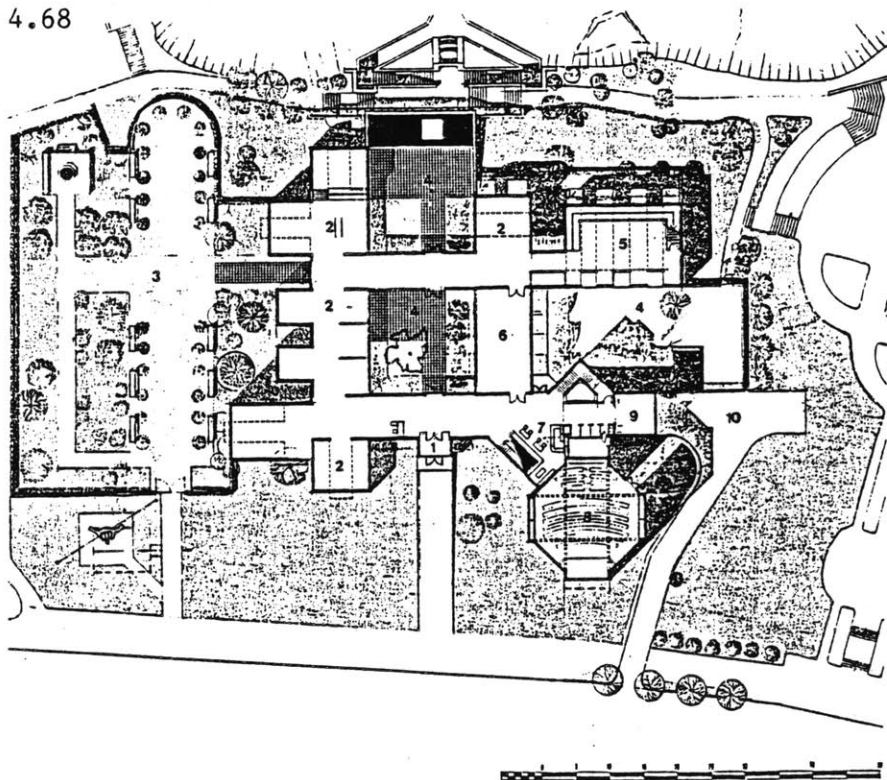
the buildings in Kurashiki as a major rice distribution center.

Secondary systems moving perpendicular to the canal maintain the dimensional relationship of the primary access while juxtaposing the rhythm of stopping forms. In the secondary access, the dimension in passage carries many of the same dimensions as the buildings. The territorial control of the buildings and the passage are greater in these overlapping zones.

4.67



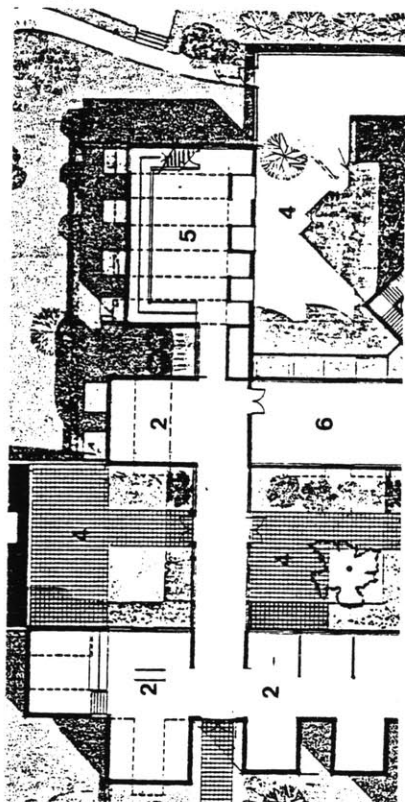
4.68



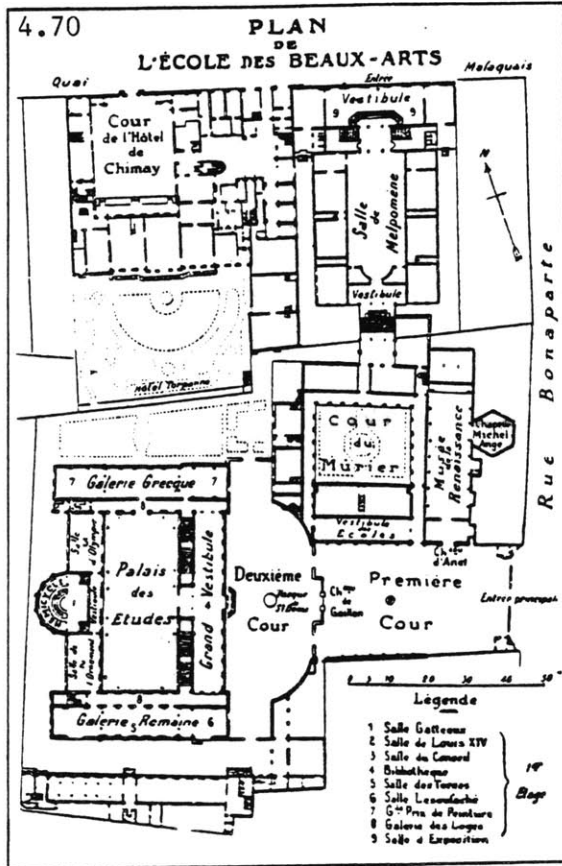
Josep-Lluís Sert

The Miro Foundation by Sert demonstrates the alternation of open and closure form as one moves along the corridor.

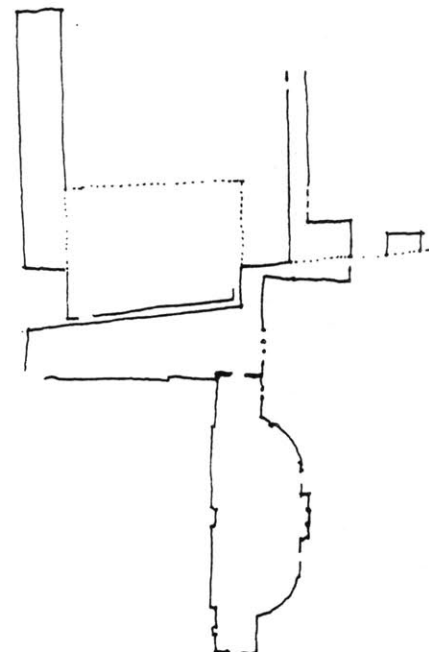
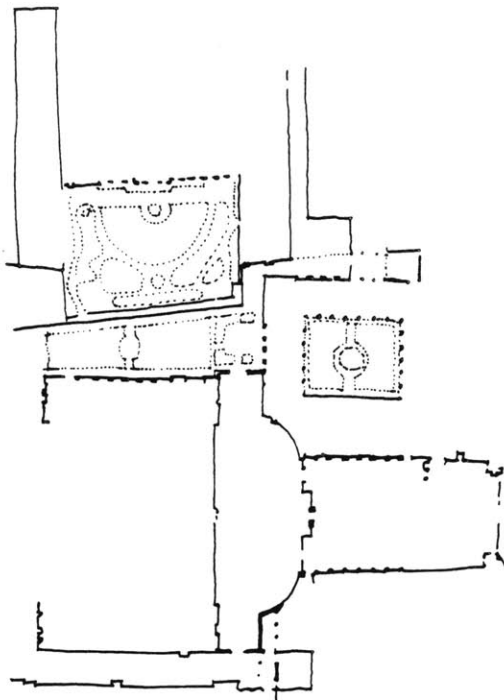
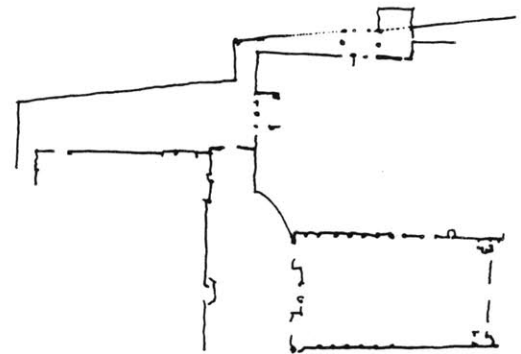
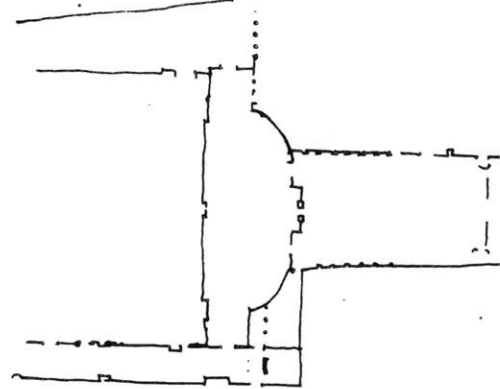
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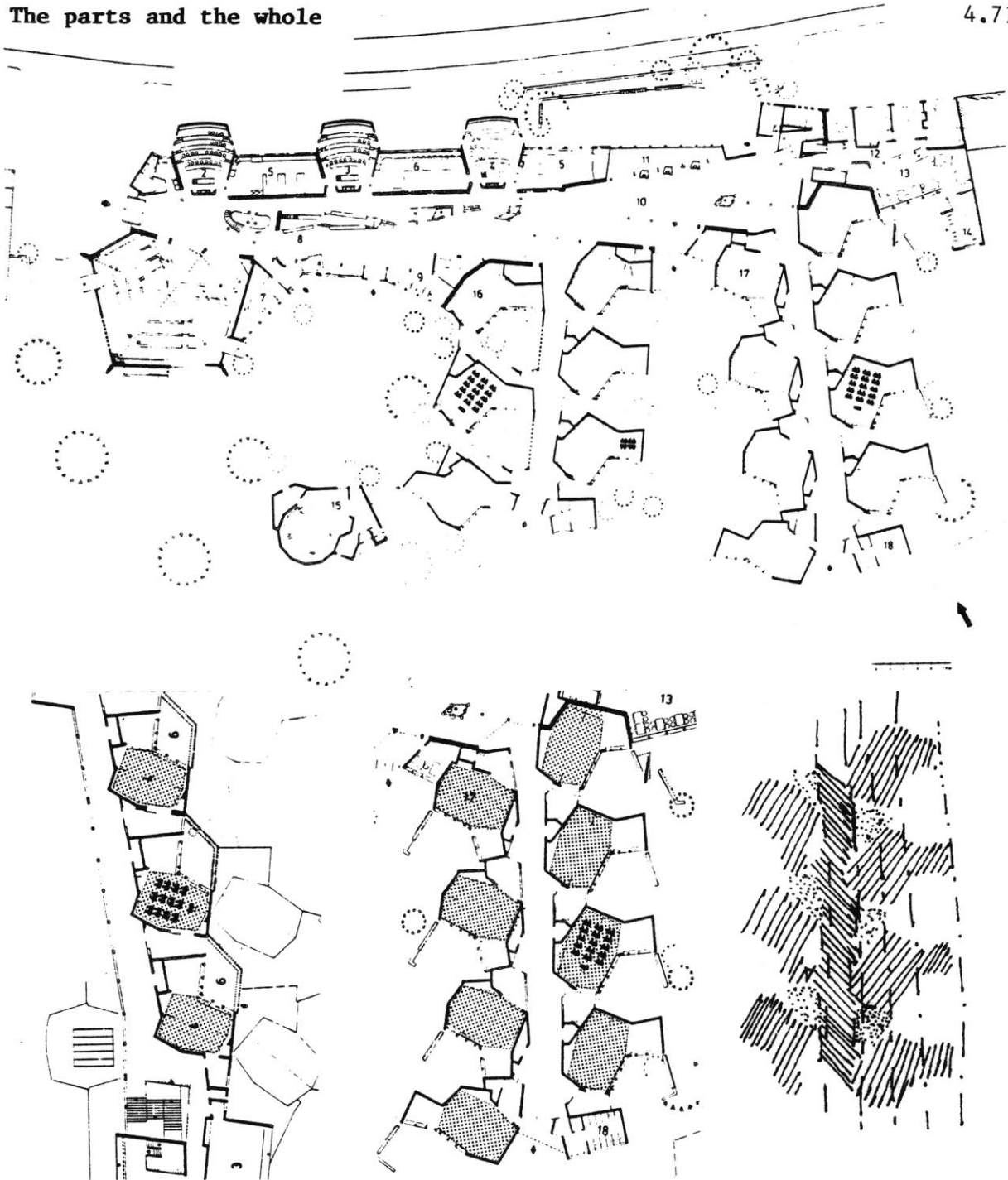


Passage within a particular grouping of buildings may be defined by the repetition and overlapping of a similar form of access space. In the Ecole des Beaux Arts, variations of the "Y" repeat to define the exterior passage.



Typology: Corridor

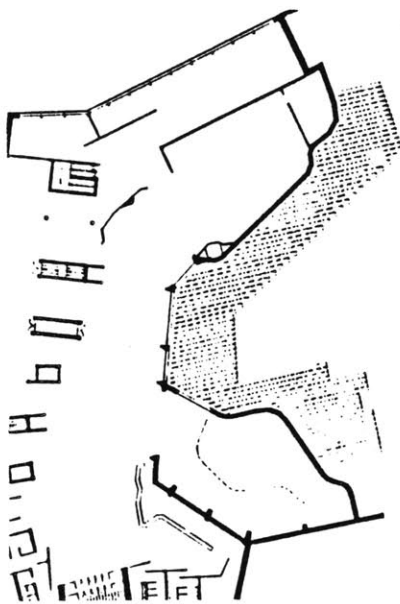




The form of the corridor is marked by the linear distribution of territories. The degree of passage is based on the perception of transparency between territories. In Scharoun's

Geschwister Scholl, the alternation between exterior and interior territories develops along the repetition of at least four parallel zones of passage. Each contributes to the understanding of the individual unit with the whole.

The accompanying examples from the Alvar Aalto's Project for an Art Museum in Shiraz, Iran, Aldo Van Eyke's L'Arnheim Pavilion in Brussels, and the Louvre demonstrate the repetition of zonal understanding of territory and the relative sense of exchange determined by the form of closure.



4.73

Project for an Art Museum, Shiraz, Iran. Alvar Aalto, 1970.

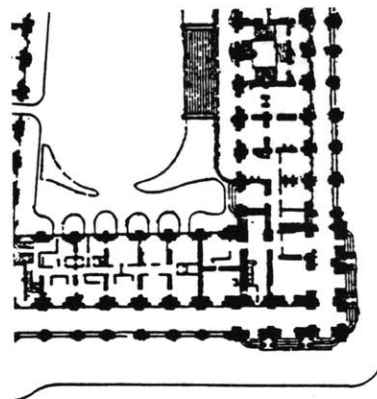
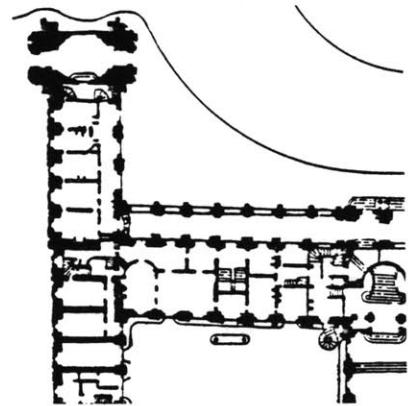
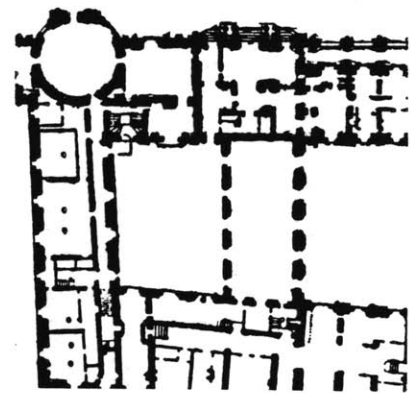


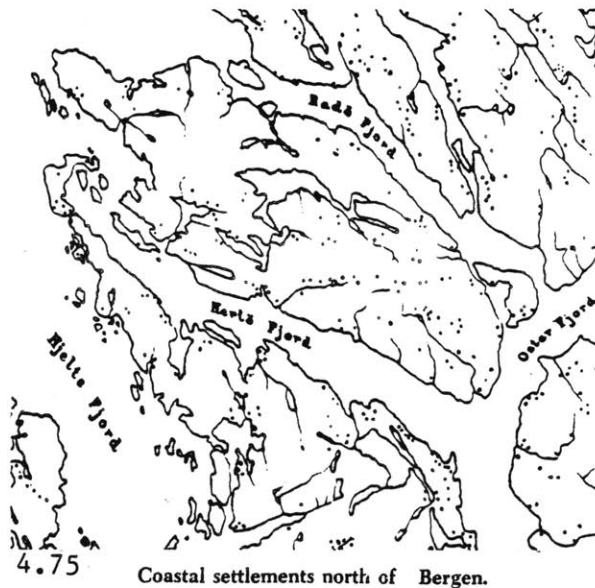
4.74

L'Arnheim Pavilion, Brussels, Belgium. Aldo Van Eyke, 1966.

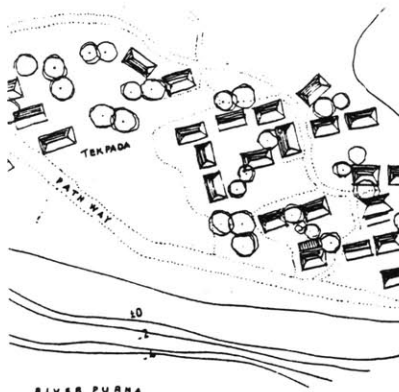
Louvre

4.72





Coastal settlements north of Bergen.



4.76



4.77

Field Organization

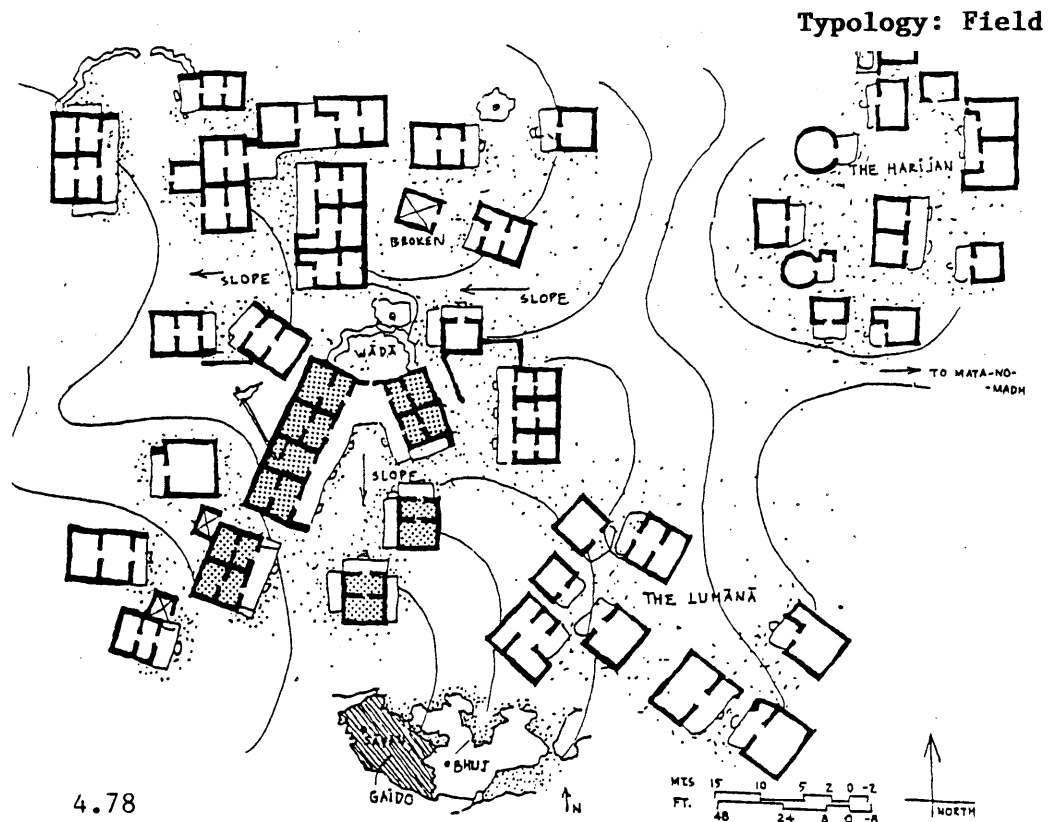
In field organization there are two forms of territorial generation of passage: 1) directional and 2) multidirectional. The categories describe the directional growth characteristics of these forms. The density of buildings and their territories determines the characteristic control that forms have over passage. To simplify the categorization of density, I use Maurice Smith's terminology for the degree of density:

a) "open field": where territories of varying forms do not demonstrate control over each other yet exist simultaneously;

b) "dimensional stability": where the dimensions of buildings equal that of spaces around them and similar patterns of dimensions become recognizable;

c) "Packed territories" defines the range between a continuous grouping of dimensionally stable territories and closely overlapping or interpenetrating territories.

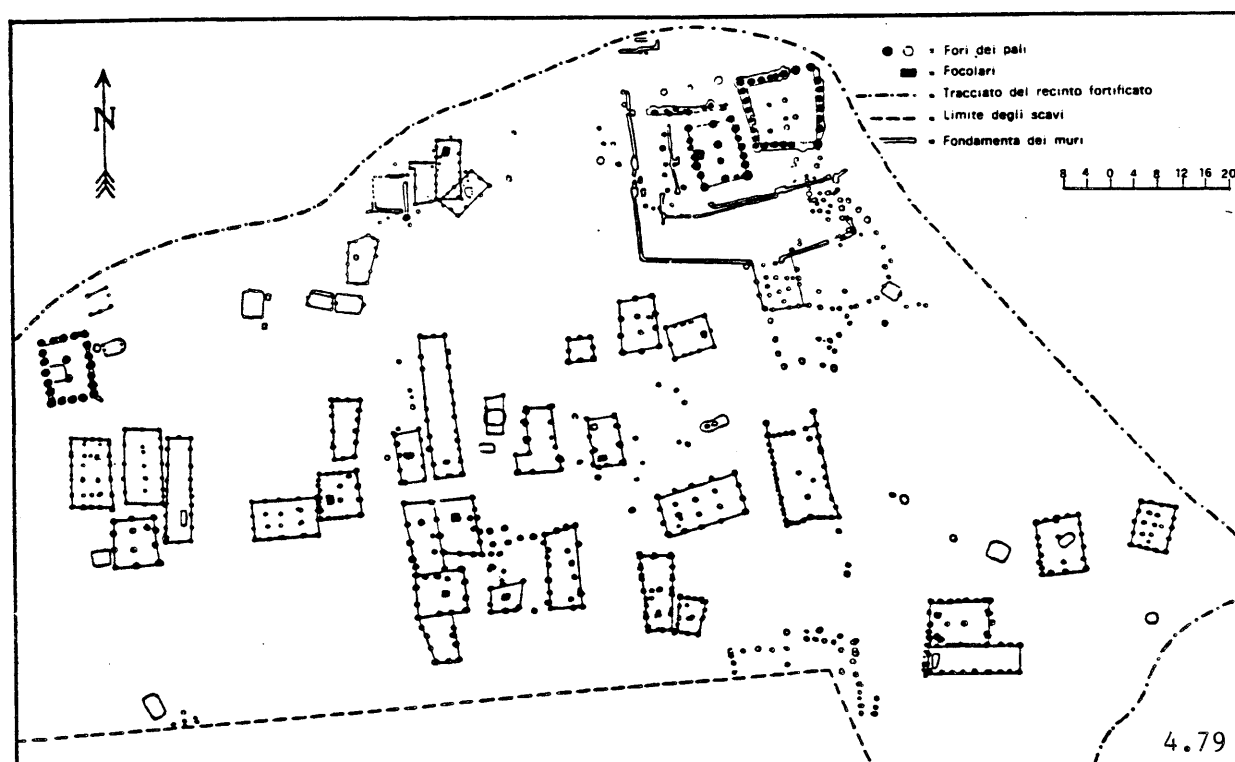
"Packing" is associated with higher densities or concentrations of building forms.



Each of these terms refers to the degree of density of a given form within the field. As exemplified in a field of flowers, it may be said that the field is "packed" with daisies and have an "open" arrangement of poppies simultaneously. Boston is "packed" with low-rise housing and has an "open field" of high-rise towers.

These comparisons of territorial density are recognizable at any size. In most cases, since these are categories for degree of density, "packed territories" would demonstrate dimensional stability as well as elements of an "open field."

As these categories refer to general distribution characteristics of these forms, a larger question to be explored is the relative size and density that each form of organization must achieve to, first, be recognizable and second, lose its definition and cease to give information for orientation within the field. The following examples demonstrate the growth of directional and multidirectional forms from open to territorially stable and packed forms.

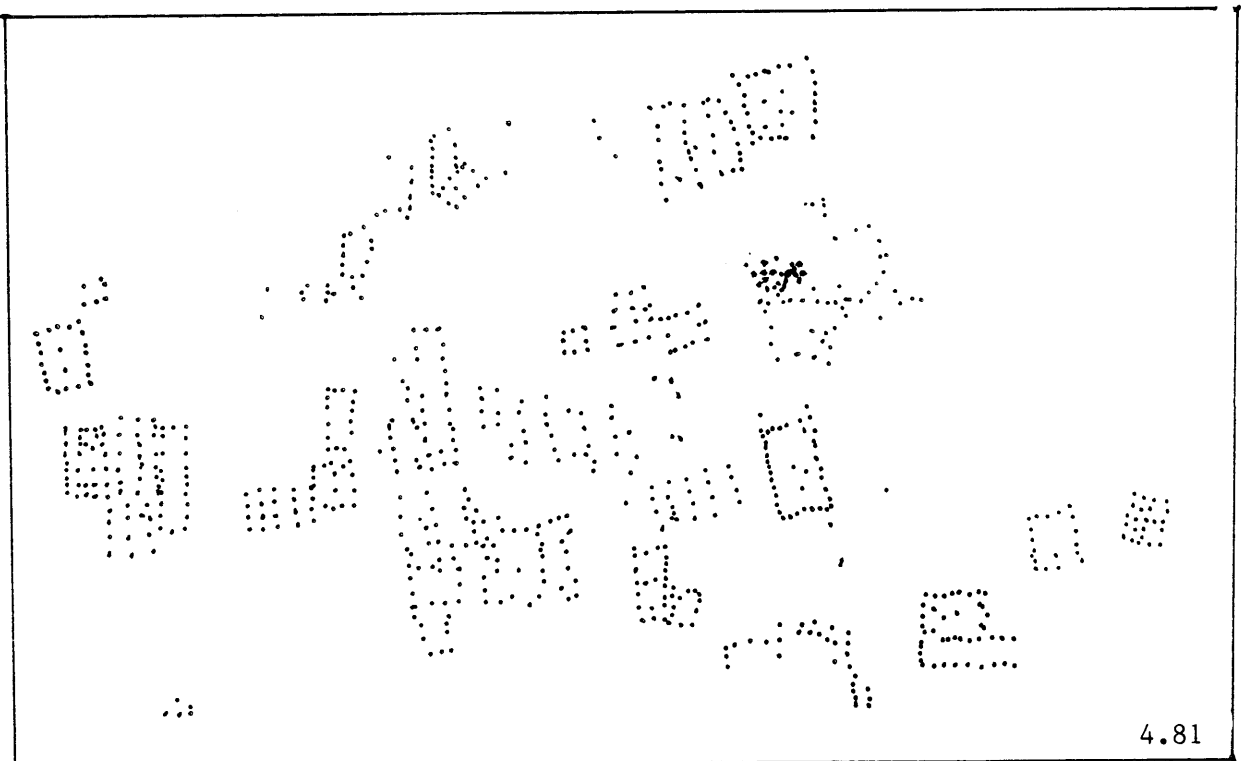
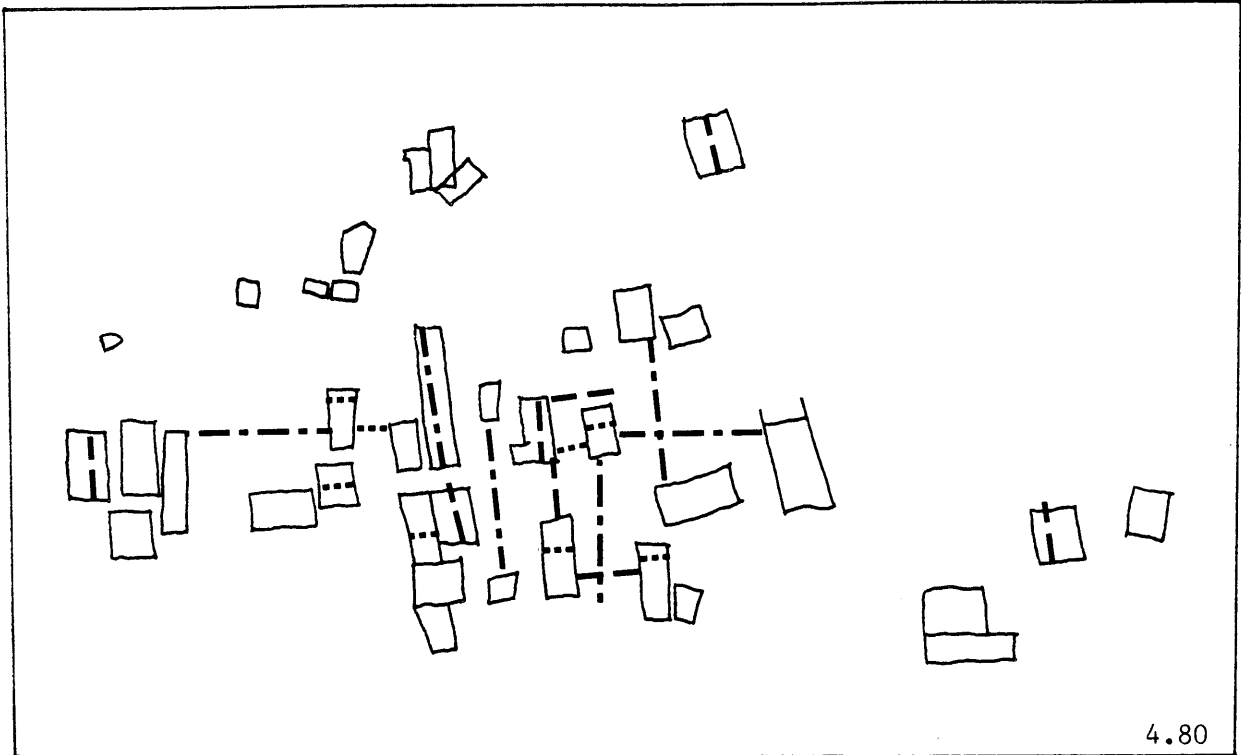


Hallstatt

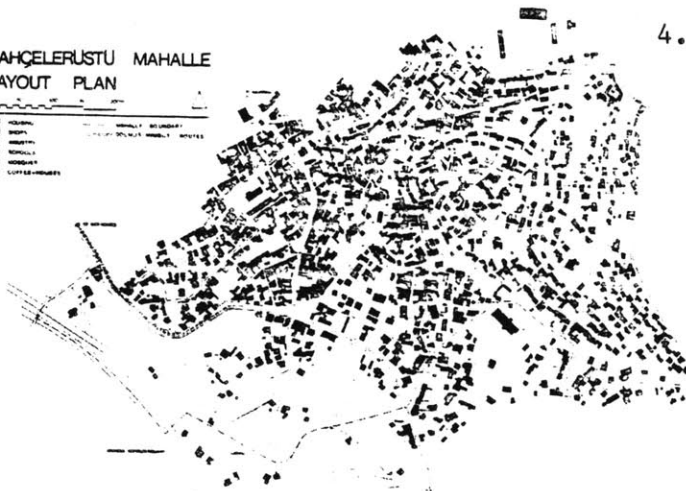
The neolithic habitation at Hallstatt, Germany is an example of a dimensionally stable territory. The diagrams above show the space of the passage as dimensionally similar to the sizes of built territories. Furthermore, the relationship of structural members makes this reciprocal relationship more explicit. The dimensions of passage are almost indistinguishable from the occupied territory. Similar form characteristics are seen in the villages opposite.

Although less highly structured than the courtyard type of Pompeii, the form of territorial stability

exhibited here is well adapted to an additive growth process in a village. When these forms are expanded to larger territories or cities, associations with larger forms of landscape or built forms need to be integrated with the individual structuring of spaces. For these buildings, associative movement may be in any of several directions. Relative distance is built through repetition of a similar dimension. The location or orientation of these buildings in relation to the landscape often determine the characteristic form.



BAHÇELERÜSTÜ MAHALLE
LAYOUT PLAN

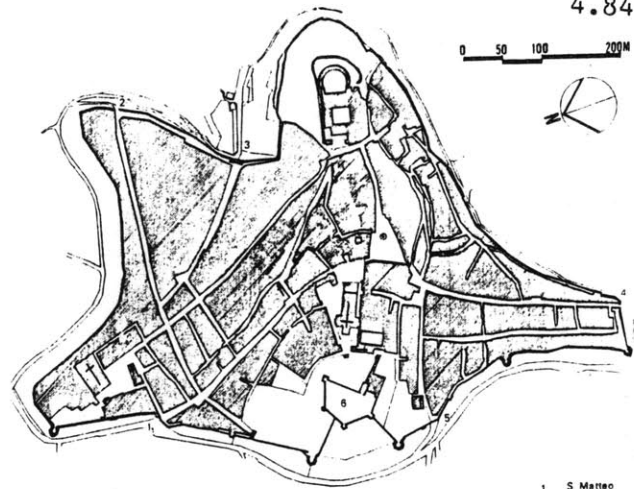


4.83

Typology: Field

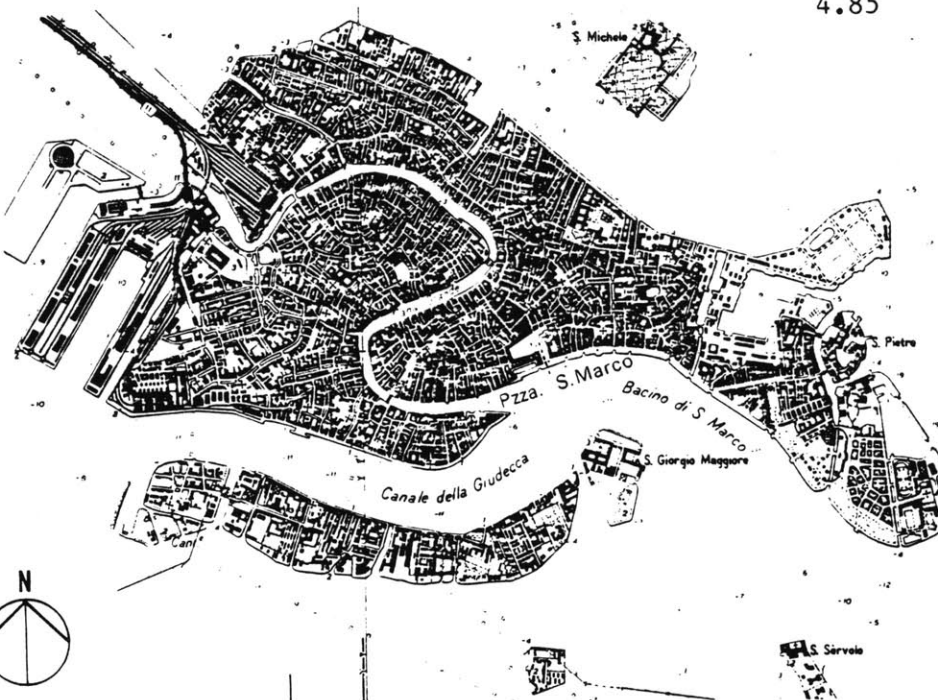
4.84

0 50 100 200M



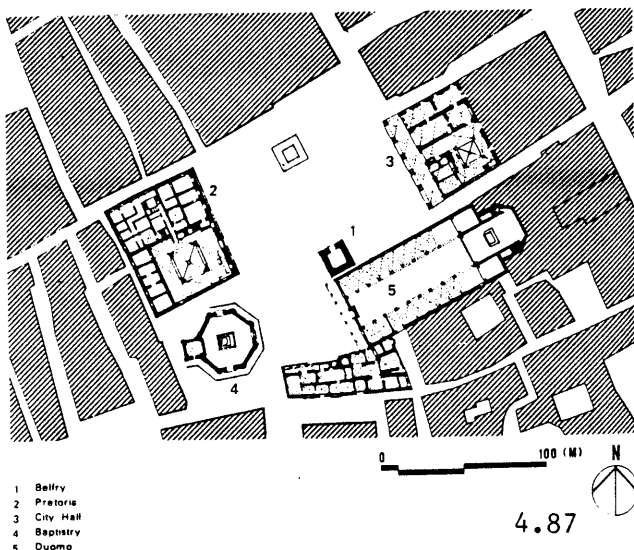
- 1 S. Matteo
- 2 Giacomo
- 3 Fonti
- 4 S. Giovanni
- 5 Quercetecchio
- 6 Fortesio

4.85





0 500 (M)



The multidirectional form of the plaza in Pistoia gives a sense of the directions to be taken in the overall orientation within the town. The size of the plazas allow for visual connections to gauge the relative size and direction of each block. The passage is almost that of a room to room sequence. Each of the rooms provides reference views to three or more connecting blocks. These plazas bring organization of the city down to the site and building size.

In the organization, design, and planning of a building, we visualize the form of organization and project this on a two dimensional drawing. The experience of these spaces will never be simultaneous but will be sequential or associative depending on the design.

Reciprocity as a principle for the design of passages allows the associations of where we have been, where we are, and where we are going to converge into a single framework from which differences and changes in the formal understanding of place may be judged.

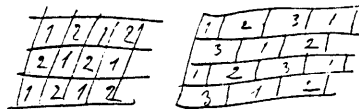
The ruins of the Pallatine Hill acknowledge both the strength of the building form and the space of passage as built territorial sequences.

The parts and the whole

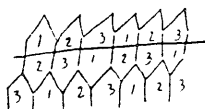
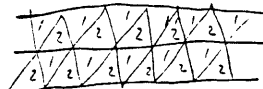
Organisation of structural characters. Decrease and increase of composite units.

The linear expression of structural ideas is not the only one. Planar formations can also be expressed in tonalities or colours, which may also serve to make the parts work towards the whole!¹

Square structuring can be accomplished in colour with two elements

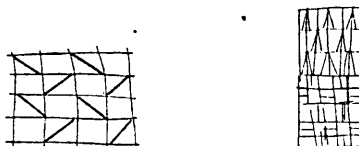


Where planar units meet in a line a change of element is necessary.
Where planar units touch in a point no change of element is necessary



The path to the individual from the confusing multiplicity of dividual units: certain units are accented and thus become dominant.² This leads to an organisation in which independent units are combined. The minor structure becomes truly individual in the figurative sense when its parts take on a character beyond the rhythm.

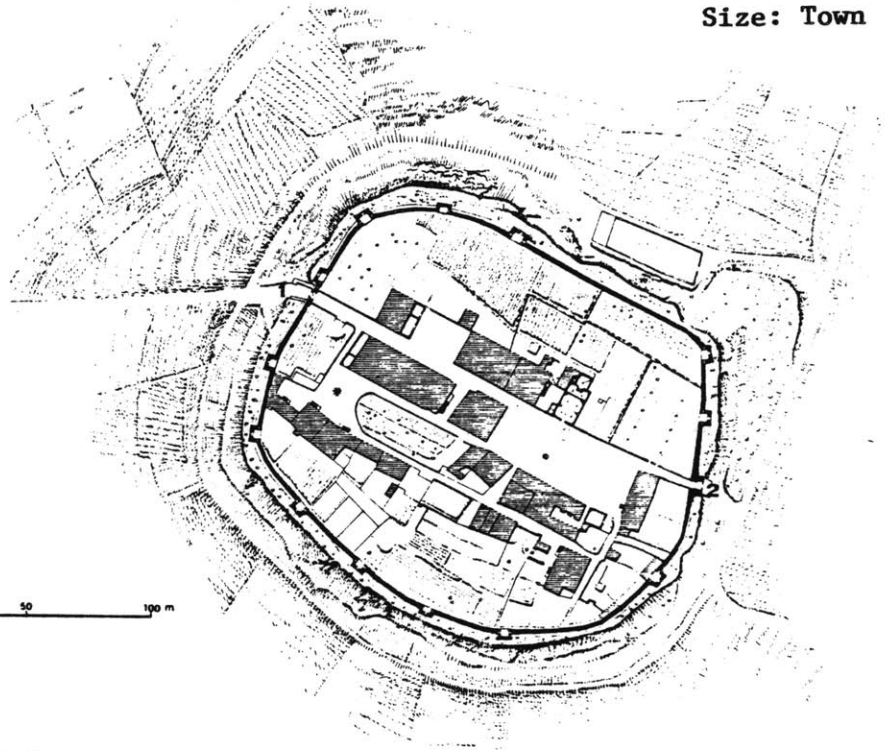
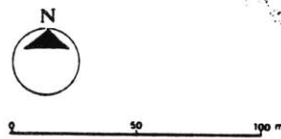
Simple higher structures combined with rhythmic pattern



The alternation of differing elements pack the territory.

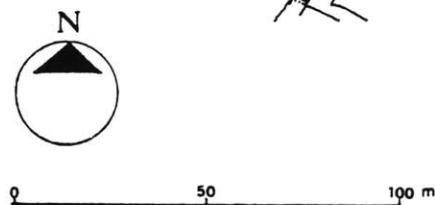
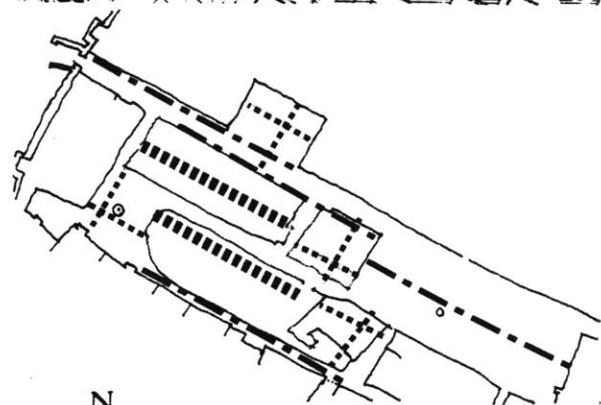
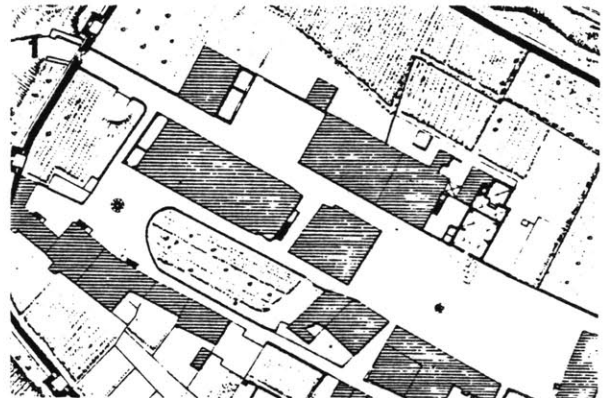
4.90

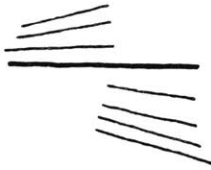
Size: Town



Directional territorial packing

In the territorial packing of directional forms, as demonstrated in the plan of Monteriggioni, there are repetitions of dimensions and the building of stable territories. Open spaces are dimensionally equivalent to the solid building form. This is similar to the multidirectional organization. In that organization, there are more variations in the additive dimensions which move along the route of passage. Two or three territories add together to form a new reference dimension. A reference direction and a sequential additive progression of shared territories generate passage in a directional field.



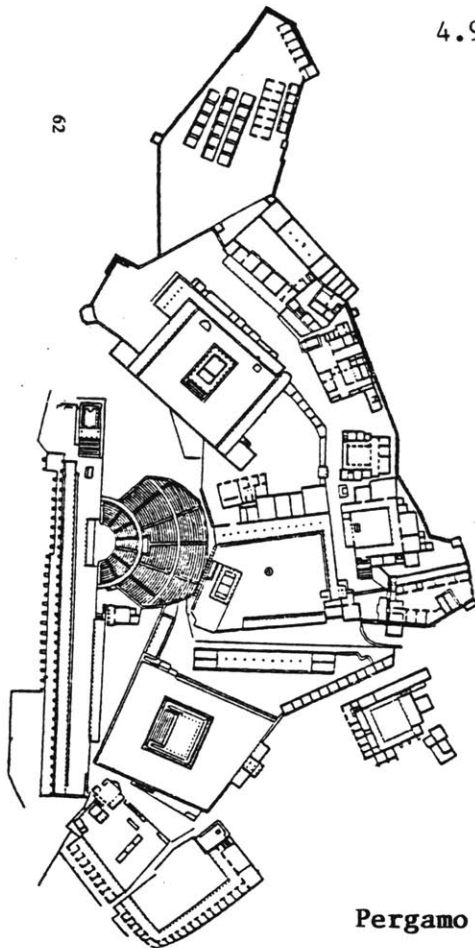


4.91

Linear analysis of converging horizontals
from:
1924/39: *Houses in landscape*, p.186.
Shift of static relations with deviation from
normal eye level.



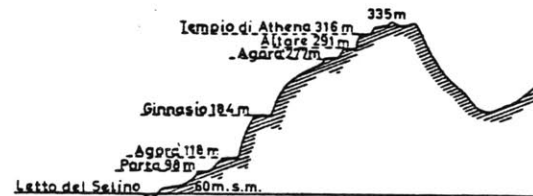
Shifting verticals and deviations from the vertical
with viewpoint moving left to right.
Linear analysis from:
1924/39: *Houses in landscape*, p.186.



4.93

Pergamo

4.92



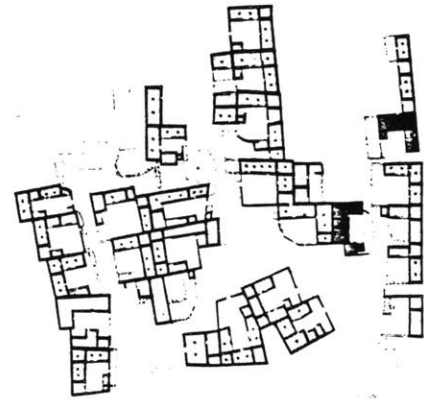
Directional

Movement along a directional system need not be in a straight line. Variations and deviations work within the system to relate a general organizational direction. The primary growth is within the zones. Territories may cross zones or form associations between the zones by parallel exchanges.

4.94



4.95



4.96



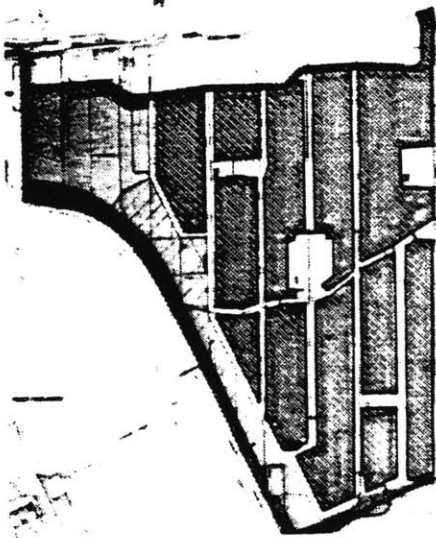
The parts and the whole

Example of use in the field organization

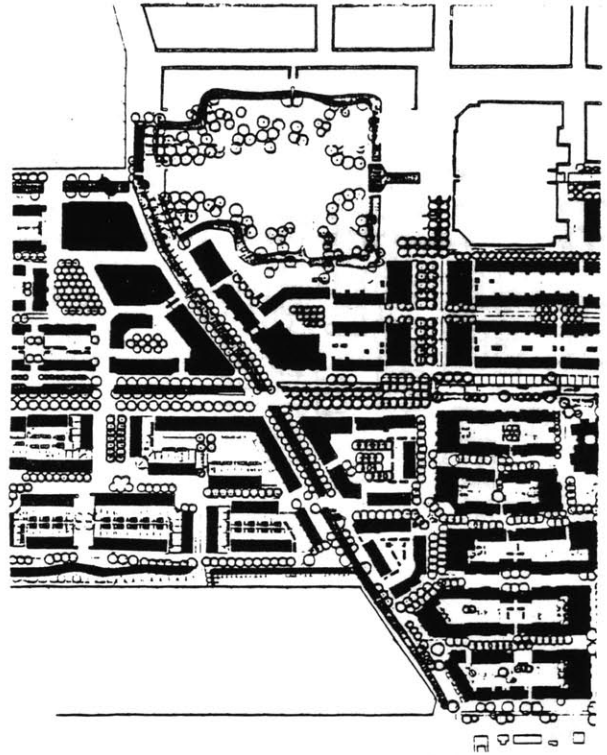
Rotterdam - Beverwaard

The bases of the observations for planning these new town fabrics are the continuities of the housing dimension.⁸ Civic functions are interwoven into the fabric structure, providing a sense of the activity placed within an already existing zone of activity--housing. To extend the commercial and public zones within the fabric, the strategy has been to step the activities on alternate sides of the street.

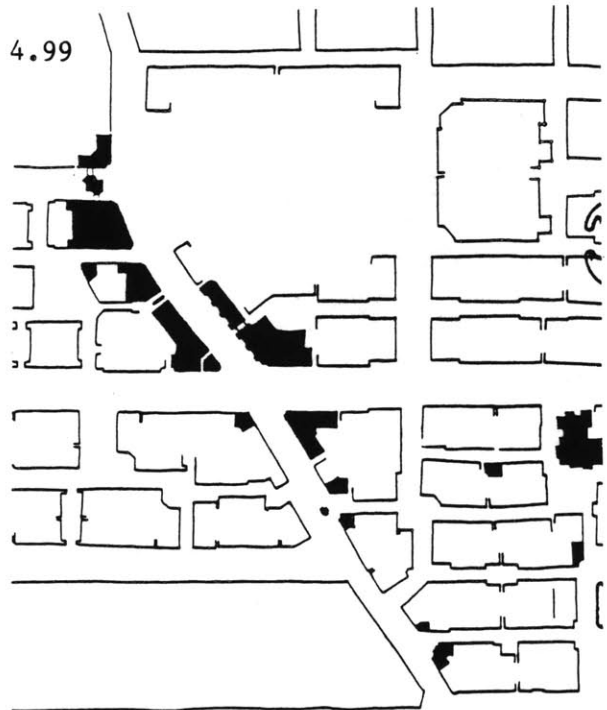
4.98



4.97



4.99



⁸Rotterdam-Beverwaard. H. Reijenga, Town planning without frills, in *Open House*, 6(4), 1981.



Typology: Field
Size: Building

4.102

The Chinese and Japanese depictions of travels actually pass through time as well as space. What comes before is used as an introduction to the next phase of the trip, as in Sesshu's Long Scroll.⁹ Parallel relationships are set up and exchanges occur in time. The conception of space as two dimensional with time connecting to create the third dimension makes time or motion the form which generates space.

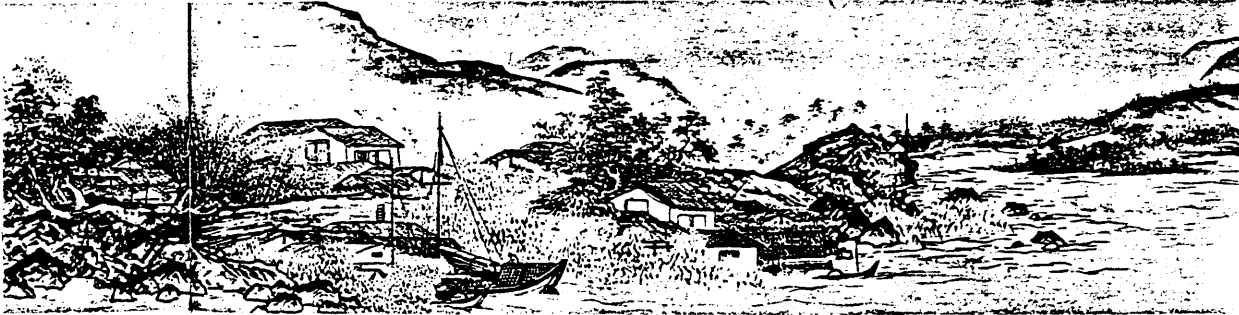
This same understanding of time is also exhibited in the Japanese perception of architectural space. The perception of time and space as additive forms in the built environment allows for a conception of building form which need not be a complete and static entity.

Additions and alterations are a natural consequence of the building process.

The following description of the origins of the articulated forms and transformations according to a conception of time and space relate to a method which may be adapted for building principles in the modern age.

This [Chinese north-south axial] symmetrical relationship was eventually assimilated and transformed by the Japanese. An example of this is the placement of buildings and shrines that comprise Esoteric Buddhist temples. Although all faced in the same direction, they were accommodated to the natural geographic undulations of mountainous sites by situating them along deflected axes. This same mode of accommodation can be seen in the design of palaces developed after Japan's Middle Ages, where several buildings are joined along a diagonal shift instead of being placed one behind the other. (This arrangement, called ganko, takes its name from the flight pattern of wild geese, gan, where the birds form a stepped-back V behind their leader.) Each house preserves frontality. These frontal planes

⁹Sesshu, *Ga cho kan* (The Long Scroll). Tokyo: Shimbi shoin, 1909.



are stepped back, following the shift of axes, creating layers of planes. Here the Japanese space-time concept regulates the perception of space. Such spatial organizations escapes from "absolute time and space."¹⁰

This form of organization describes that taken by the following two examples of field organization within the building form.

The strength and understanding of the landscape exhibited by these forms of organization have allowed additions and transformations to occur without disruption of the formal characteristics. The organization of access is maintained as an understandable system within the building by

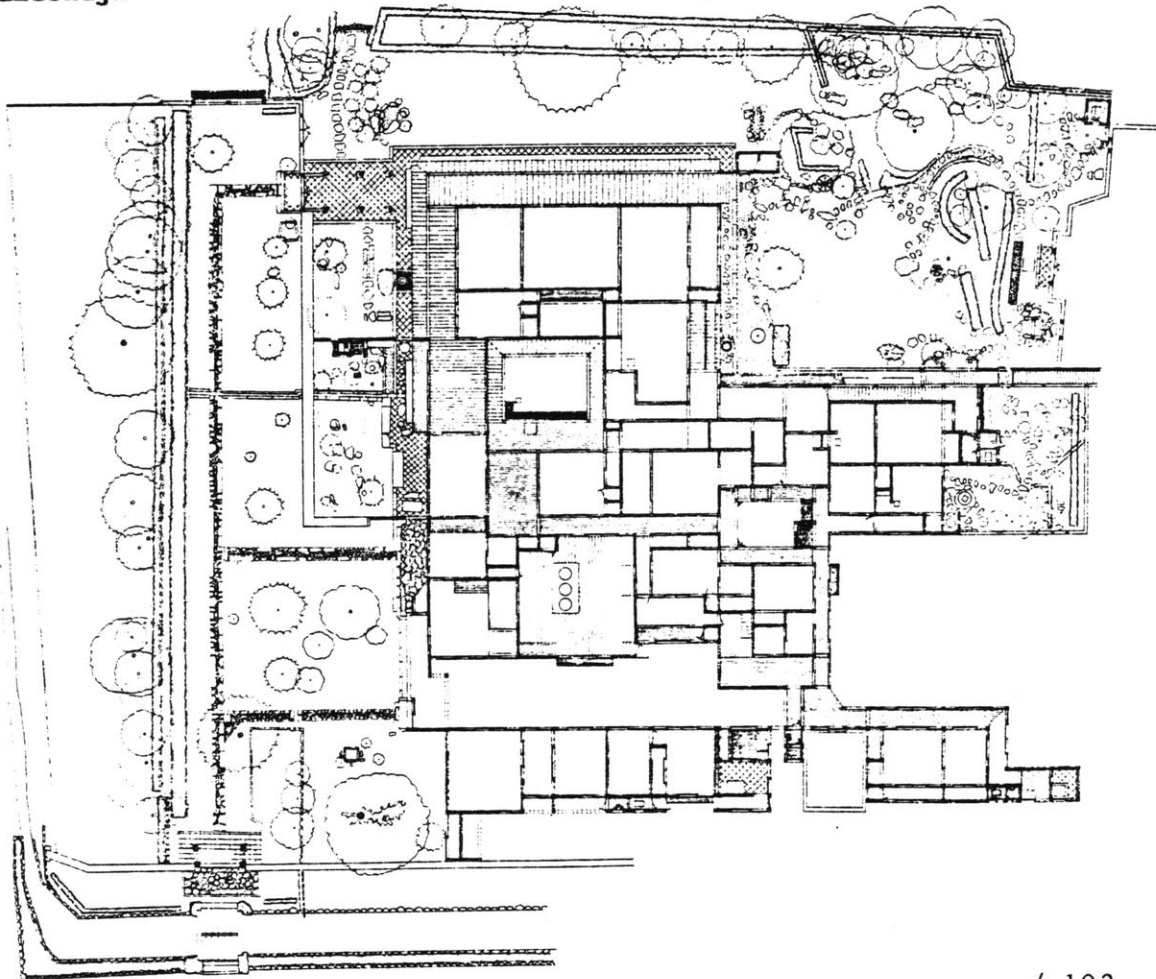
dimensional references to adjacent axes and through association with larger orienting landscape forms seen in parallel zones.

The following studies of Daitokuji Temple and Katsura palace demonstrate the transformation of the forms of passage seen in the village structure to larger freestanding buildings. Similar associations are made between the territory of privacies to the form of access.

¹⁰Seigow Matsuoka, **MA: Space-Time in Japan**. Exhibition Program, Cooper-Hewitt Museum, New York.

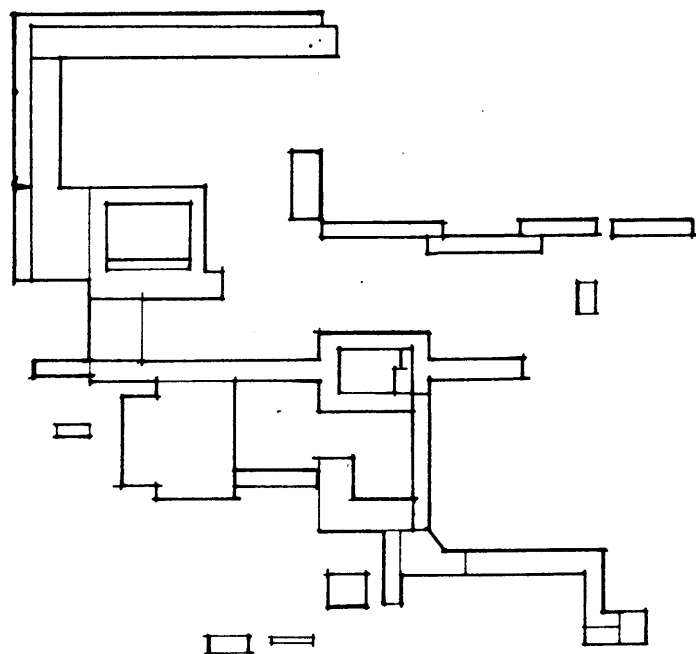
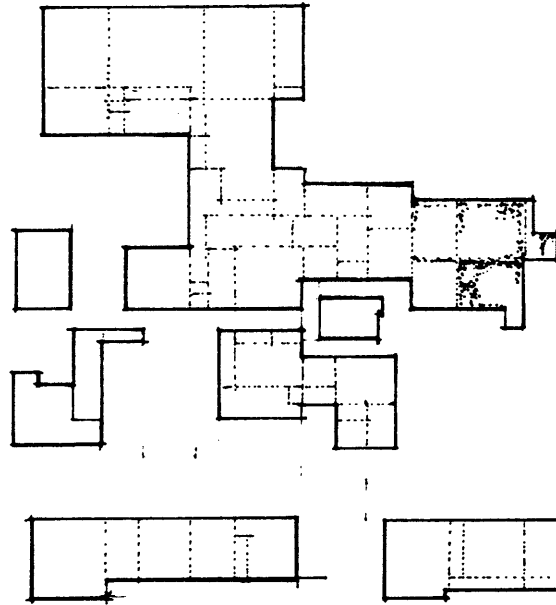
The parts and the whole

Daitokuji

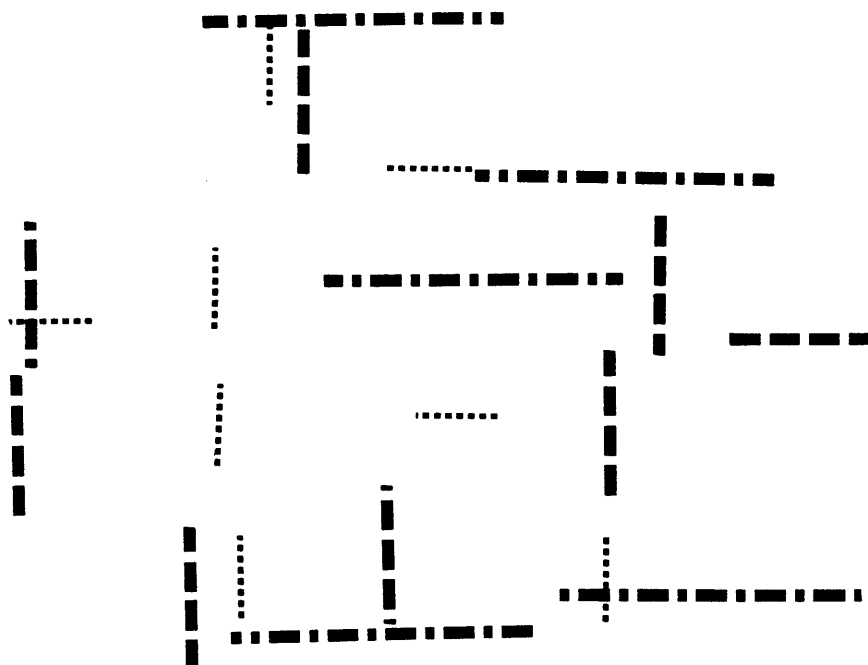


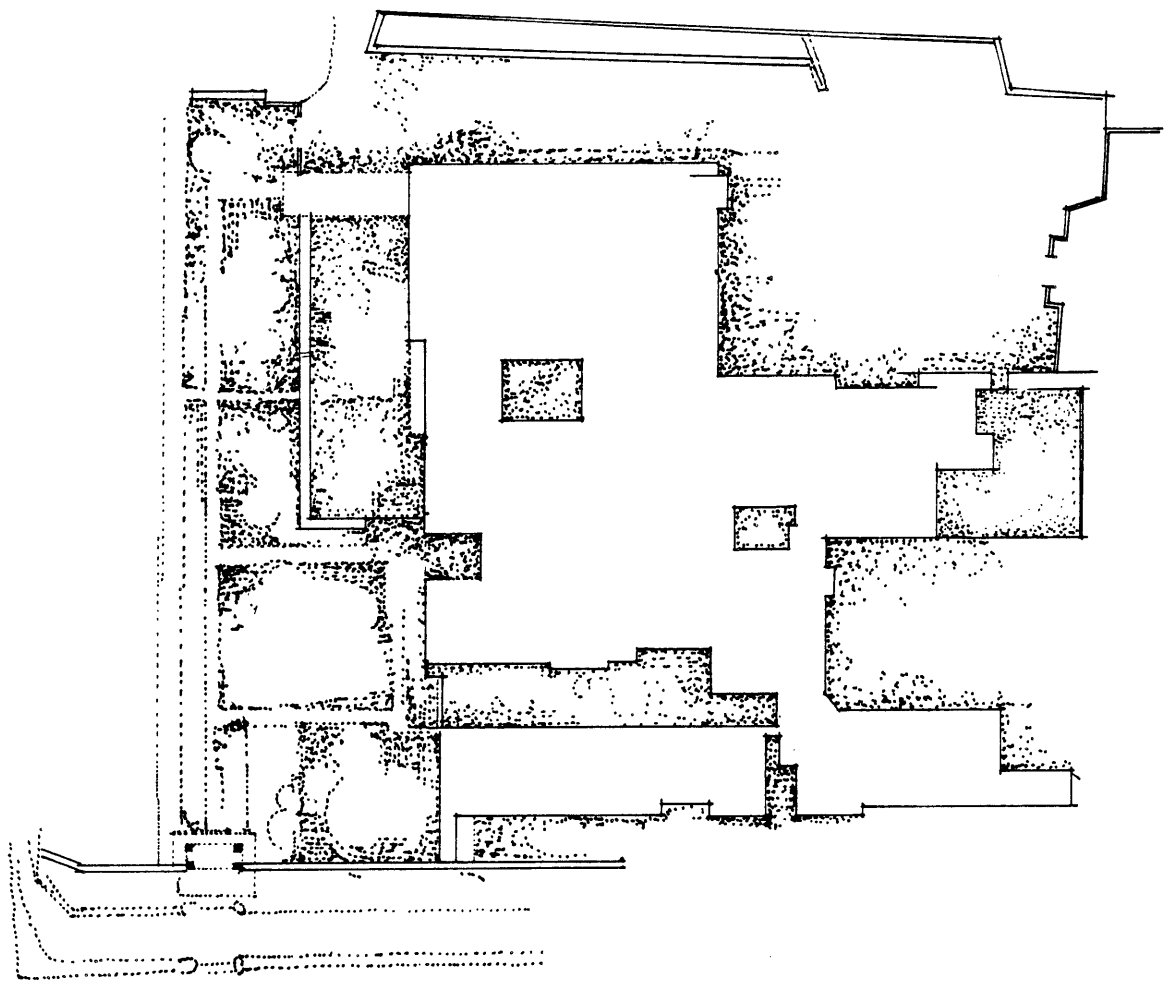
4.103

Typology: Field



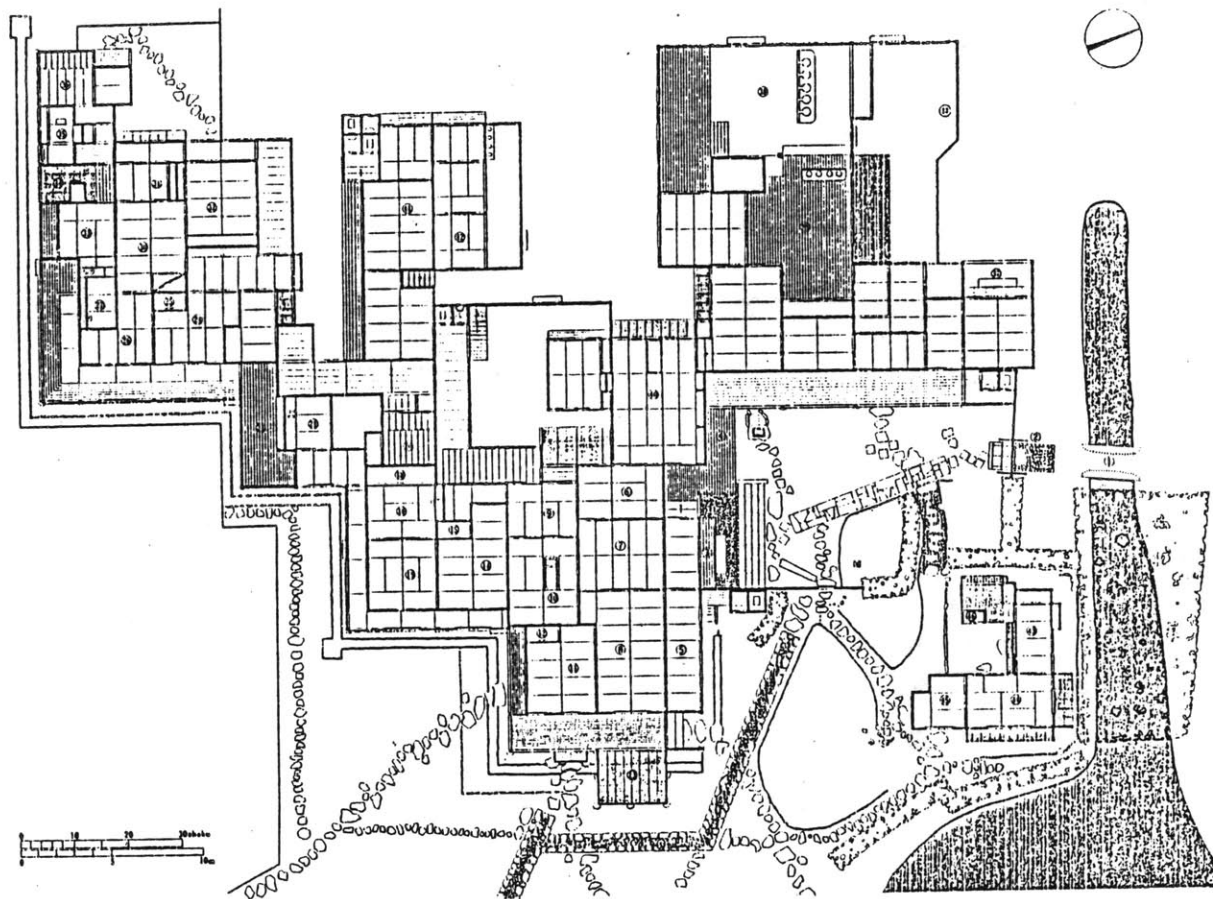
Typology: Field





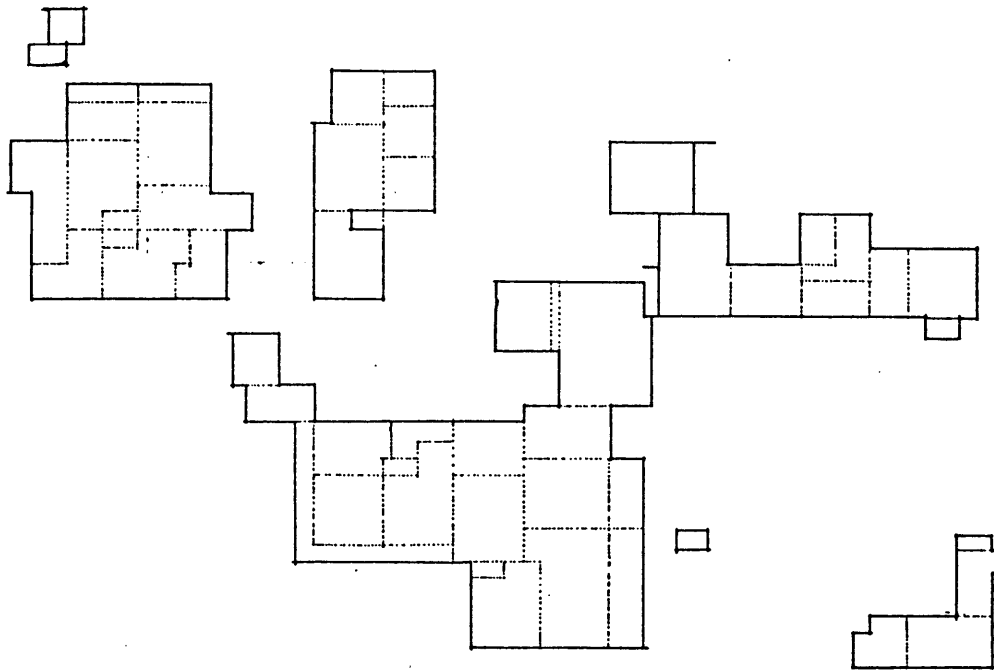
The parts and the whole

Katsura

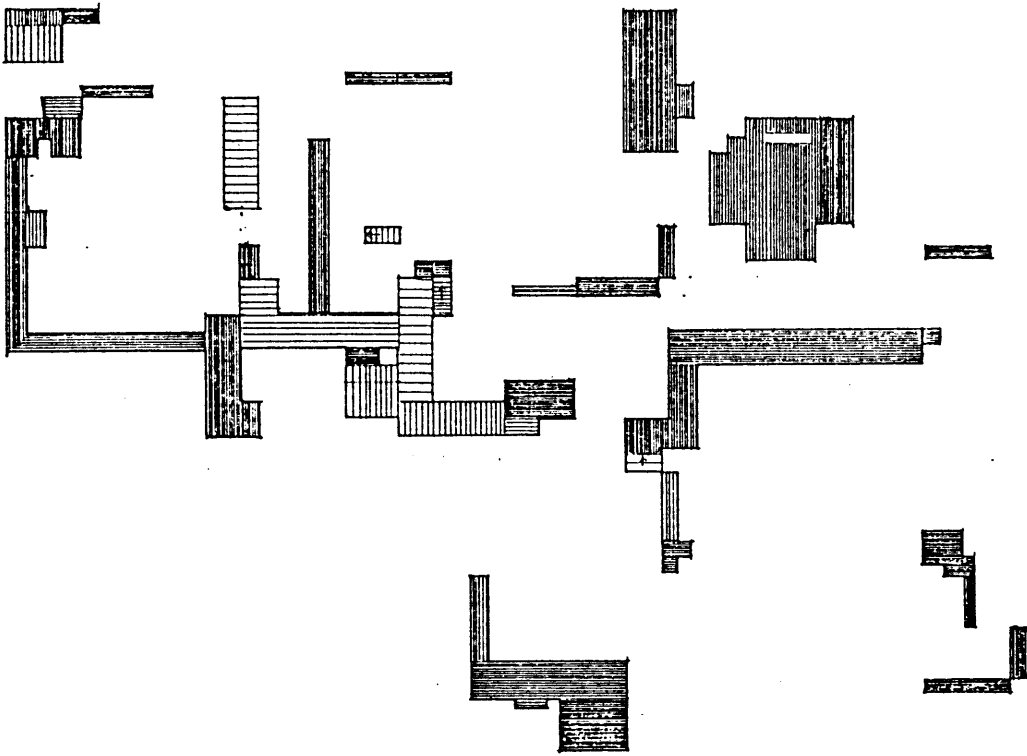


4.107

Typology: Field

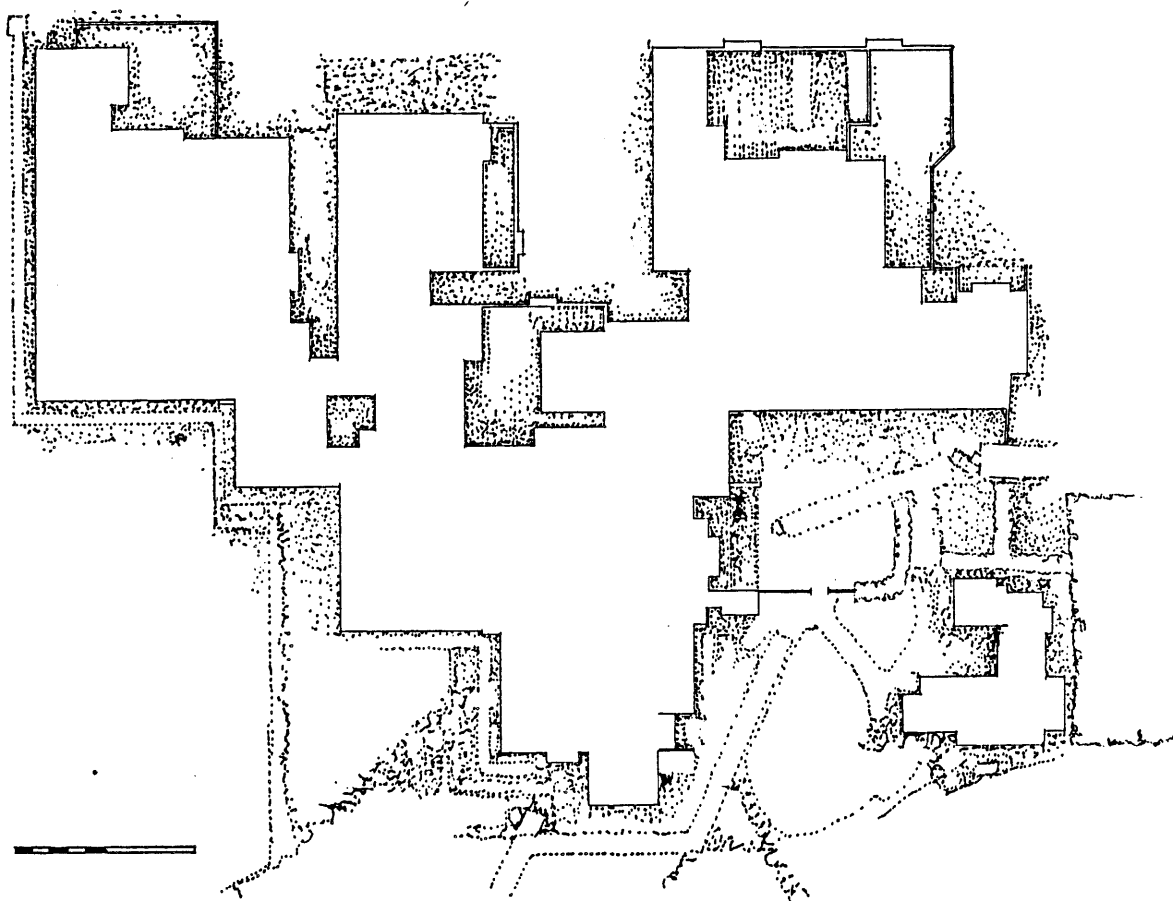


4.108



5.09

4.109



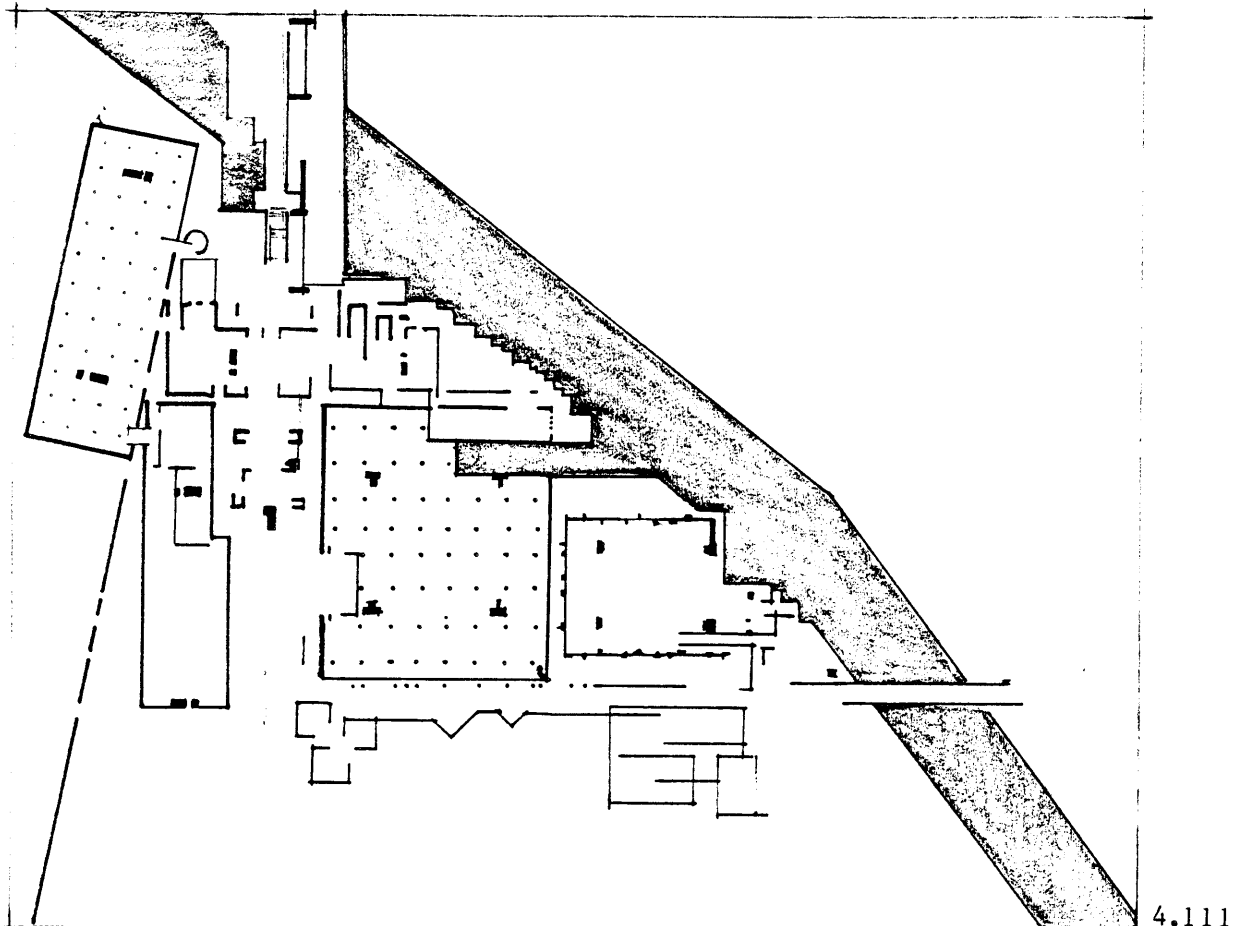
4.110

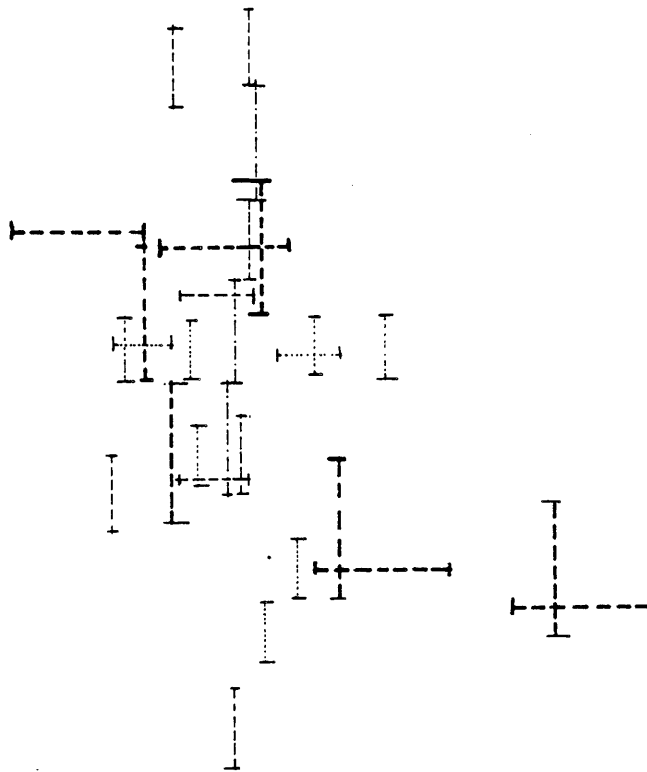
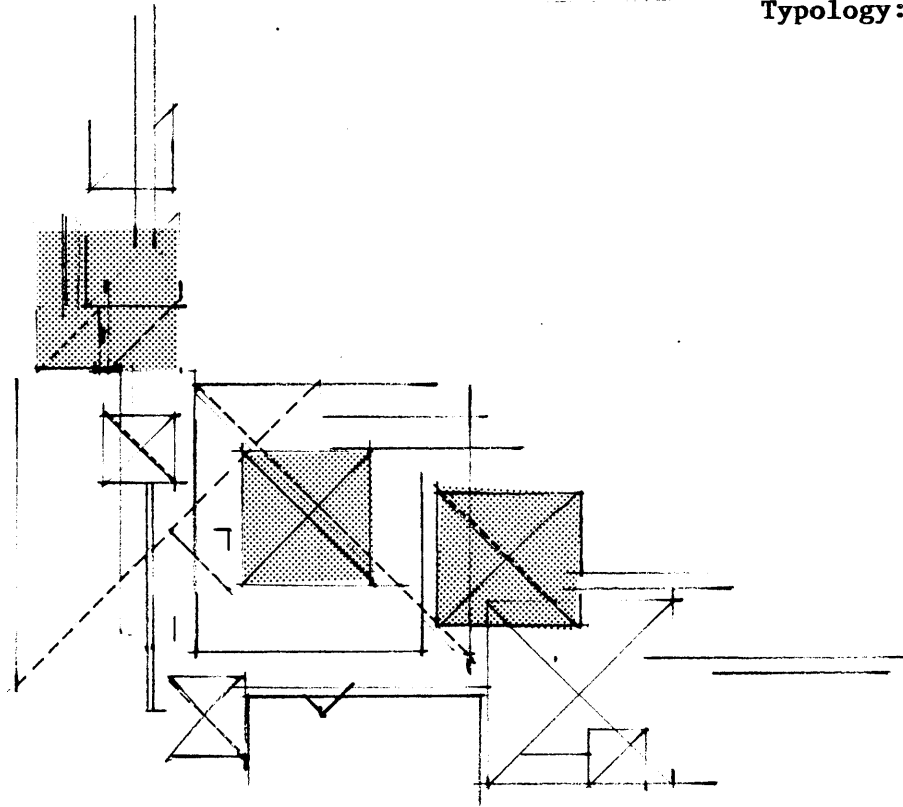
The parts and the whole

Remodeling of Italian Pavilion, 31st International Biennale, Venice 1962-63.

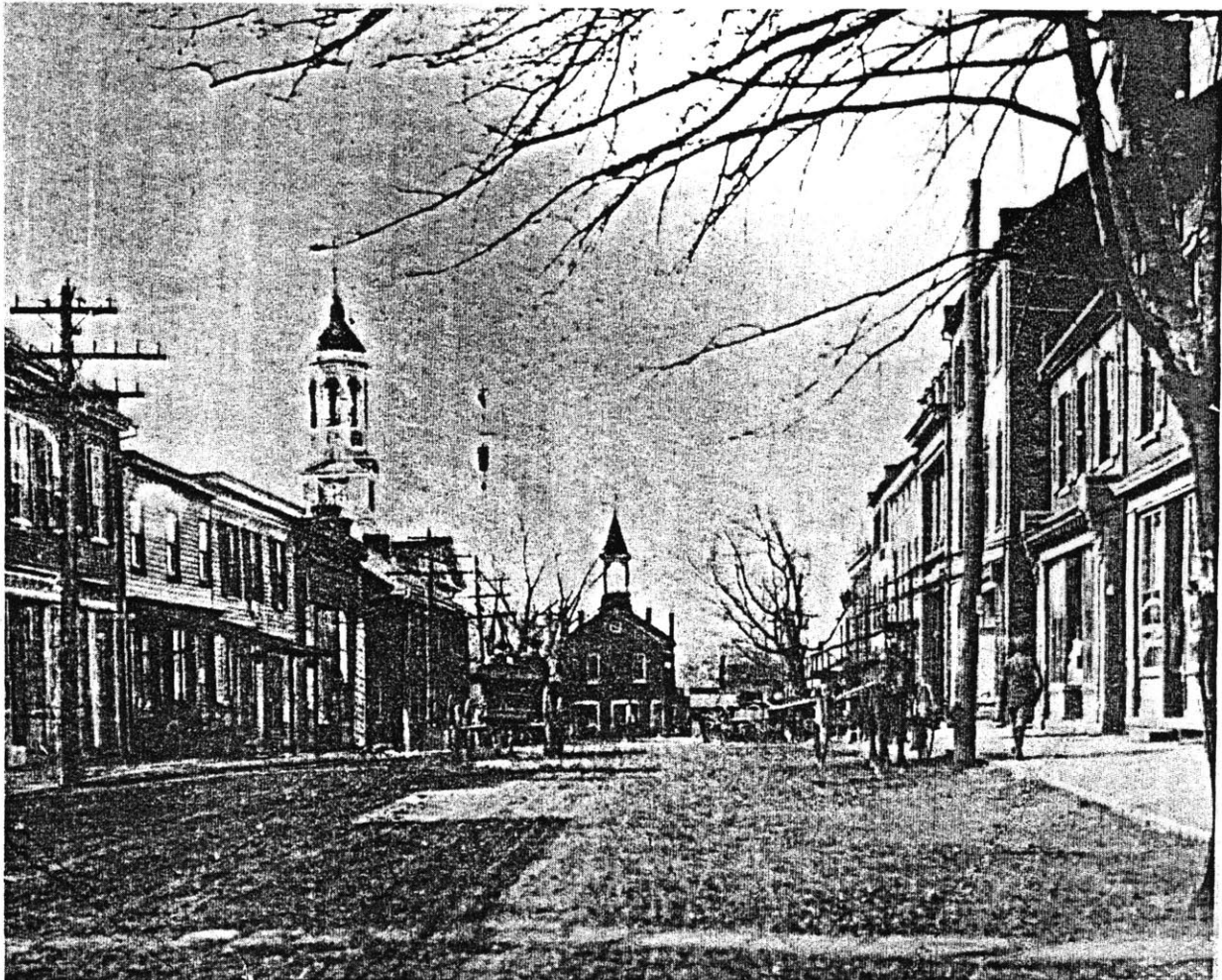
Scarpa's design for the remodeling of the Italian Pavilion for the 31st International Biennale demonstrates the transformation of existing urban fabric and exhibition buildings into a perception of

space where interior and exterior territories merge. Spaces defined within one building are redefined in the spatial experience of passage into another building. The entire site and connections across the canal are additively combined to generate a continuity of experience. The diagrams demonstrate the exchange of territories and their associated dimensional relationships.





5.01



5

WARRENTON

5.02





5.03

INTRODUCTION TO DESIGN

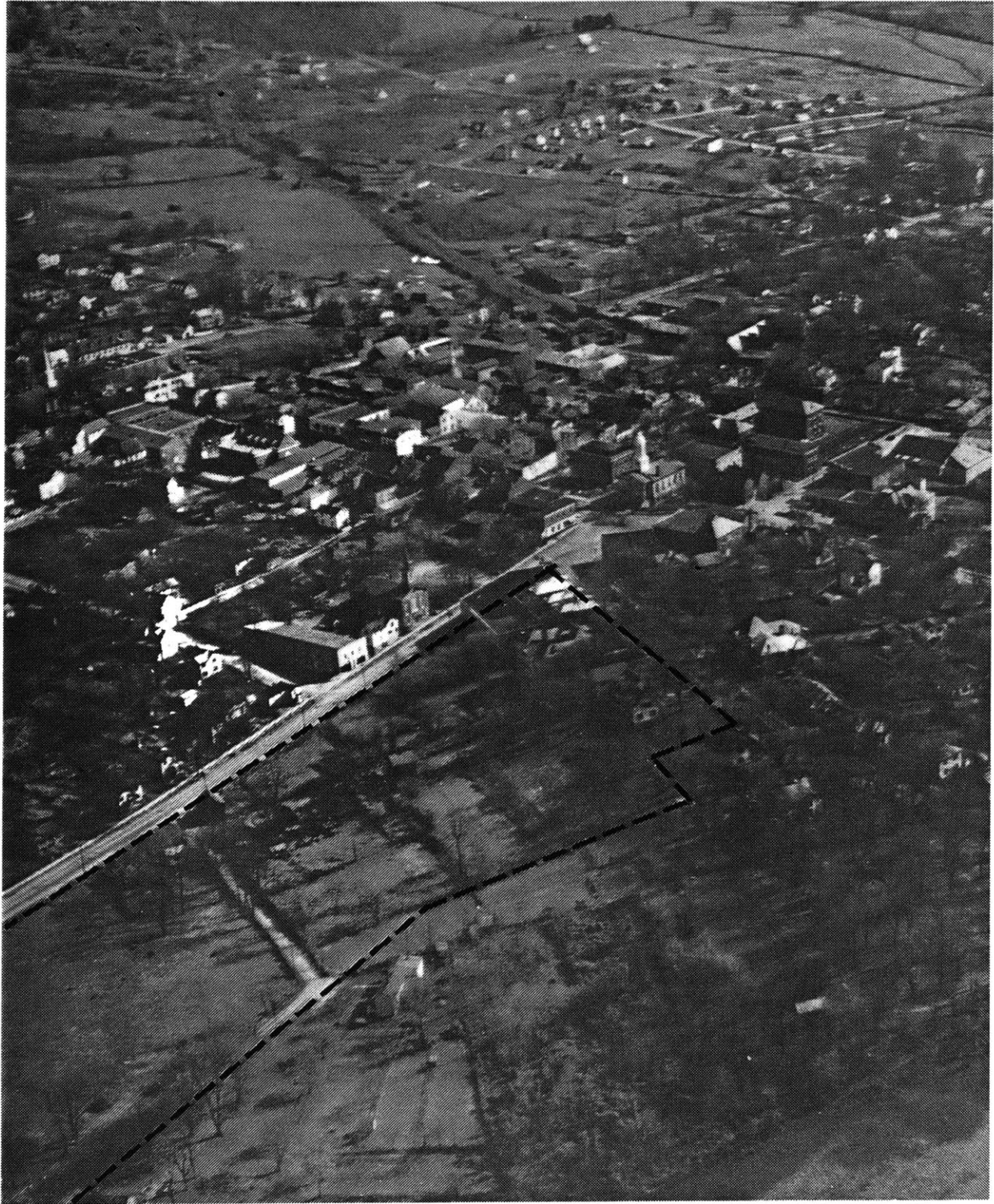
Establishing the field

Warrenton is located 50 miles southwest of Washington, D. C. in the foothills of the Blue Ridge Mountains of Virginia. During colonial times, Warrenton claimed major significance as a major outpost before the wilderness. When the railroad arrived, the town became a central distribution point for the surrounding countryside. Several key battles of the Civil War were fought in the vicinity. Today Warrenton is known for its horse farms and steeplechases. After decades of relative stagnation, the town is now under tremendous pressure for growth.

This provides a setting for the exploration of issues which confront many regions of the country which are faced with similar rapid development. The first theme is the impact of time, change and permanence, and how they may be affected by clues left at the planning stage. The dimension studies are the primary influence on directions taken. The second

theme is the form taken by public and private use. The porch studies (observation) and infill structures (design) are routes to these explorations.

Passage is reflected in many ways in the design and planning of spaces on a site. For a town with a large grouping of historic buildings and remnants of many patterns of use, an understanding of these forms of previous occupation on the site should be incorporated into the design. Warrenton has many buildings of historic significance, but is also in the process of growth and evolution. A design for this site must then incorporate the decisions of what to save and what to change. The dynamic process of growth, decay and transformations must not be hindered but guided judiciously, so that the town will continue to thrive while remembering its past and thus maintaining its essential character.



5.04

THE SITE

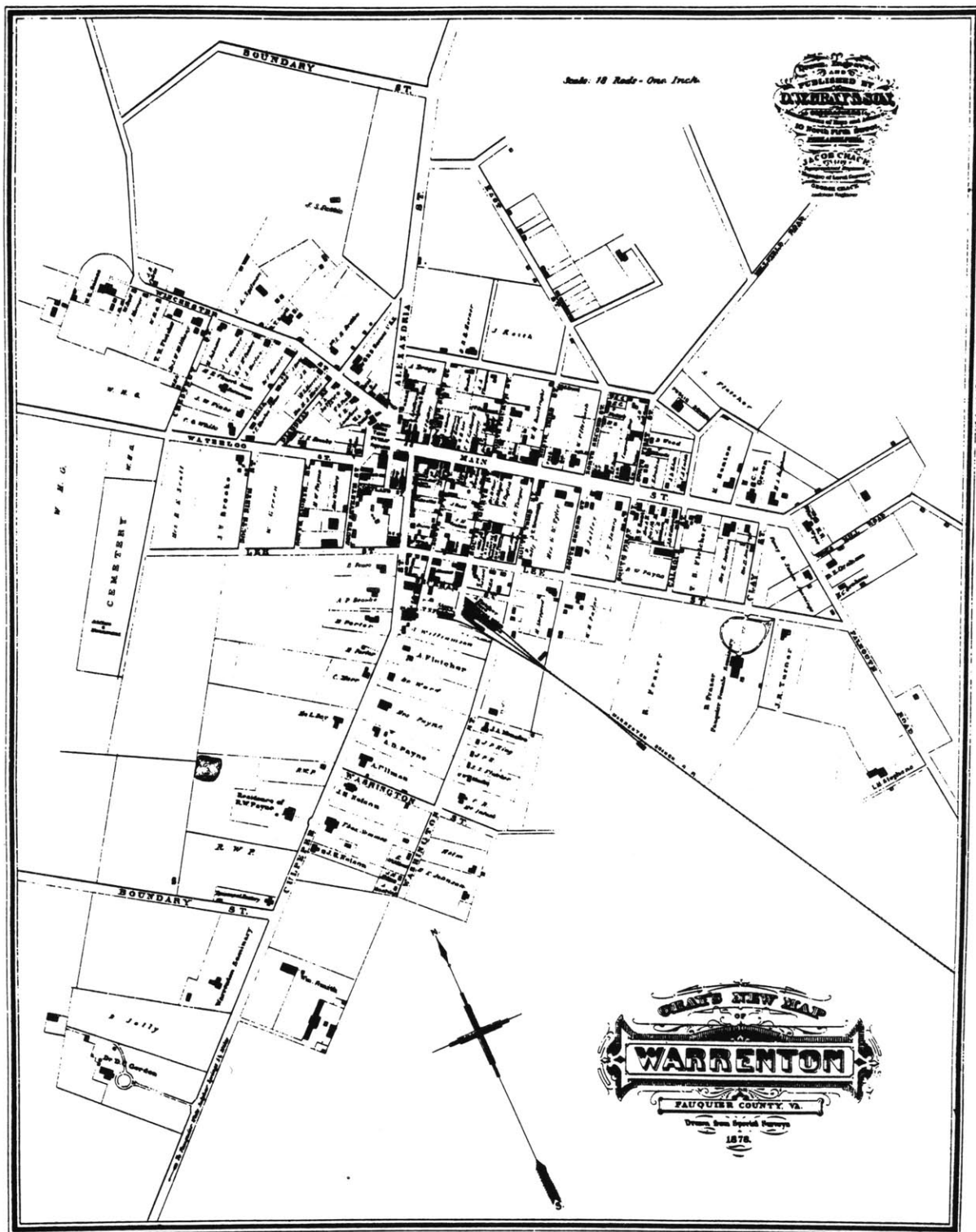
The site is located on the northwest edge of the central business district of Warrenton. It is a section on a large hill, bounded on two sides with roads leading to the town center. A park has recently been developed on some flood land directly adjoining one boundary of the site. Direct connections may be made to retail--which extends along the bounding road--and housing--which surrounds the other side. On former farmland within a half-mile radius of the site, two new housing developments are being built. The housing, along with rapid growth in other parts of the town and county, require the development of larger support facilities.

Continuities must be maintained with the commercial edge to stimulate growth and ensure survival of the town center. Connections from public facilities to housing should be facilitated by easy auto and foot access. Pedestrian areas should be encouraged.

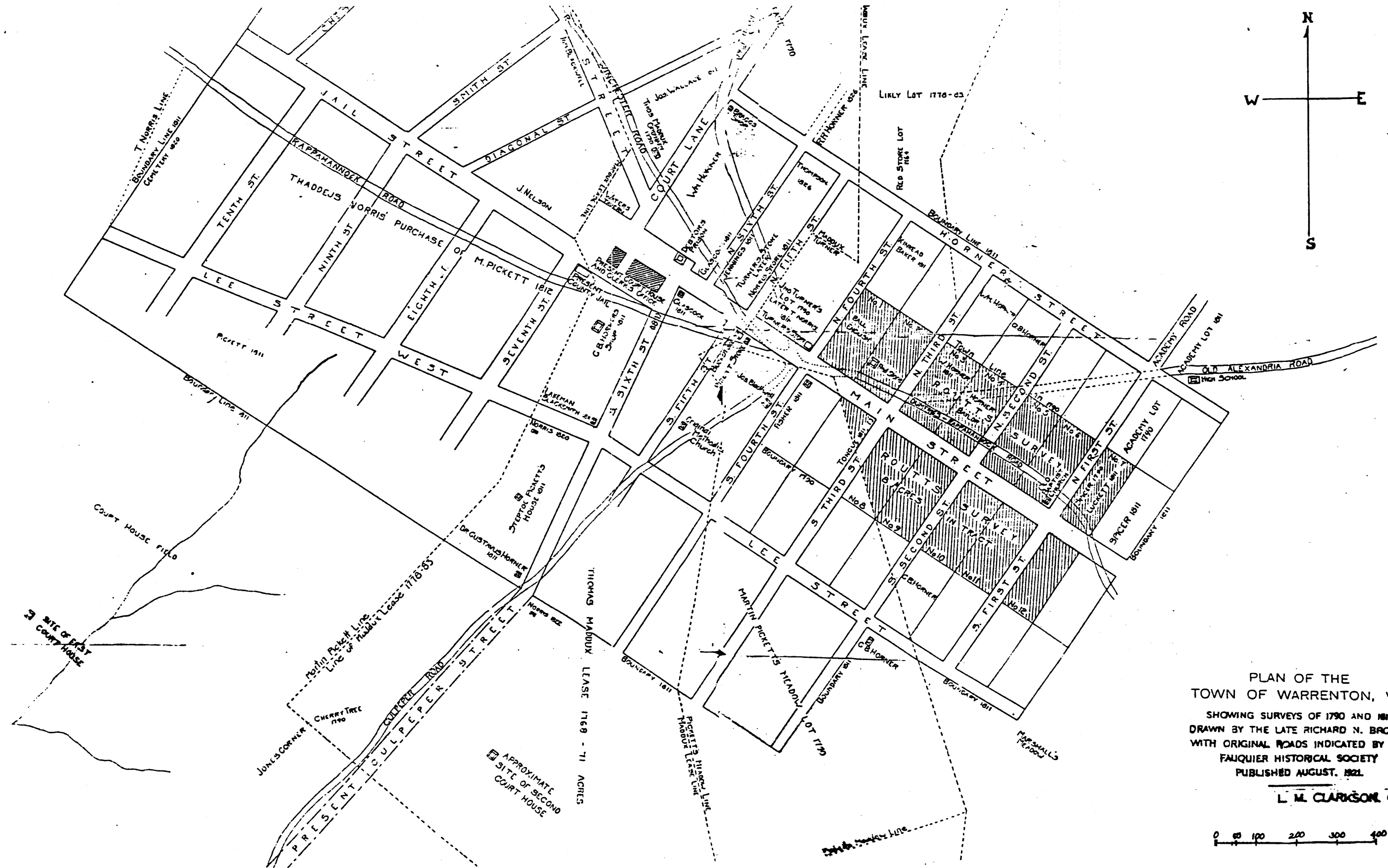
For a site with limited commercial use at the start which plans for the growth along sections, clues must be left to stimulate connections between old and new.

Stepping and extension of the public realm into the fabric of the private housing tissue is a strategy which has led to a sense of community and continuity with the new town areas developed by Reijenga in Rotterdam.² I use similar strategies. Warrenton's process of growth in its older areas has always followed the residential development. Shops were habitations as well as places of business. Maintaining those associations will encourage use of the town in off-business hours.

²H. Reijenga. Town planning without frills, in **Open House** 6(4), 1981.



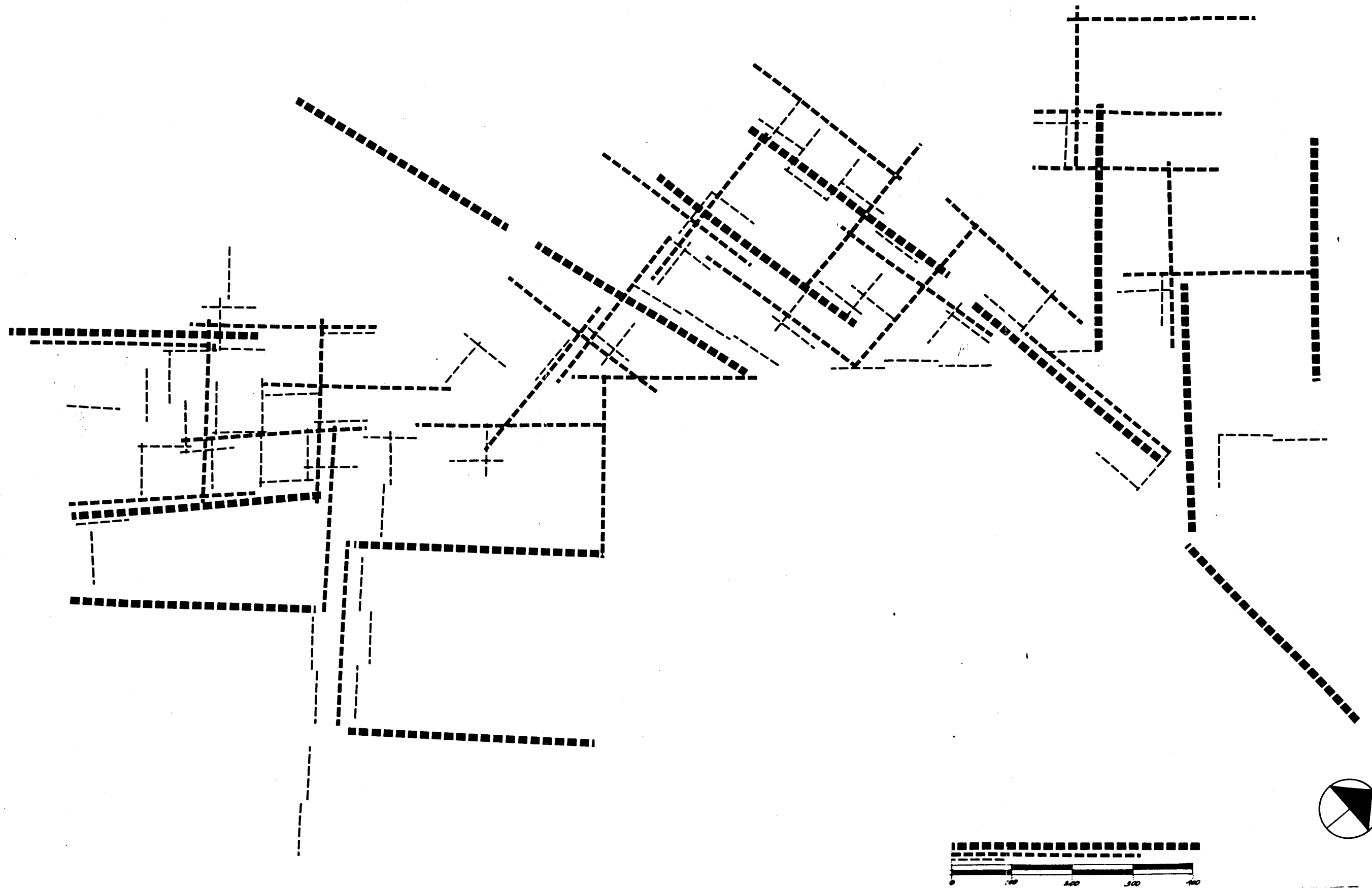
5.05



PLAN OF THE
TOWN OF WARRENTON, VA.
SHOWING SURVEYS OF 1790 AND 1811
DRAWN BY THE LATE RICHARD N. BROOKE
WITH ORIGINAL RECORDS INDICATED BY THE
FAUQUIER HISTORICAL SOCIETY
PUBLISHED AUGUST, 1921
L. M. CLARKSON C.E.

0 50 100 200 300 400







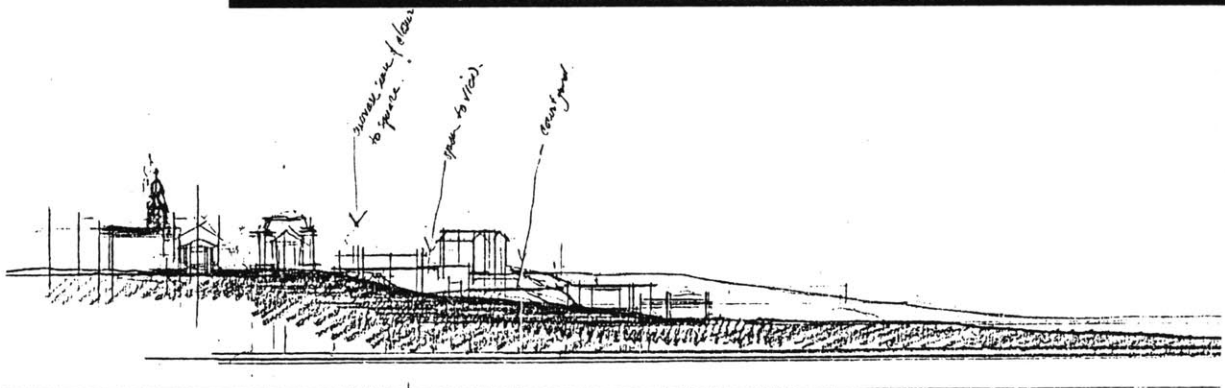
Within the tradition of the American landscape, church spires have served as orienting devices as well as focal points of community life. Associations of forms cannot be separated from the cultural use of formal objects.

In Warrenton, the spire has found associations within the organization of churches and with the center of town, the courthouse. This has served as the dominant landmark for much of the town's life. Its orientation at the top of the main ridge heightens its impact. The landmark also is the top of the site proposed for study. Two other churches bound the site and claim dominant positions in reference to the directions chosen for pedestrian routes. The relative size of the elements gives a sense of presence within each projected view of the landscape.

On the site, passages, sidewalks, streets and other infrastructure may be built that retain the essential character of the place and leave room for changes in buildings and other built forms which will fill the spaces between.

The form and organization studies inform the design decisions in the locations of markers and areas of transition. Emphasis is placed on the maintenance of continuity and association with the surrounding countryside and connected uses.

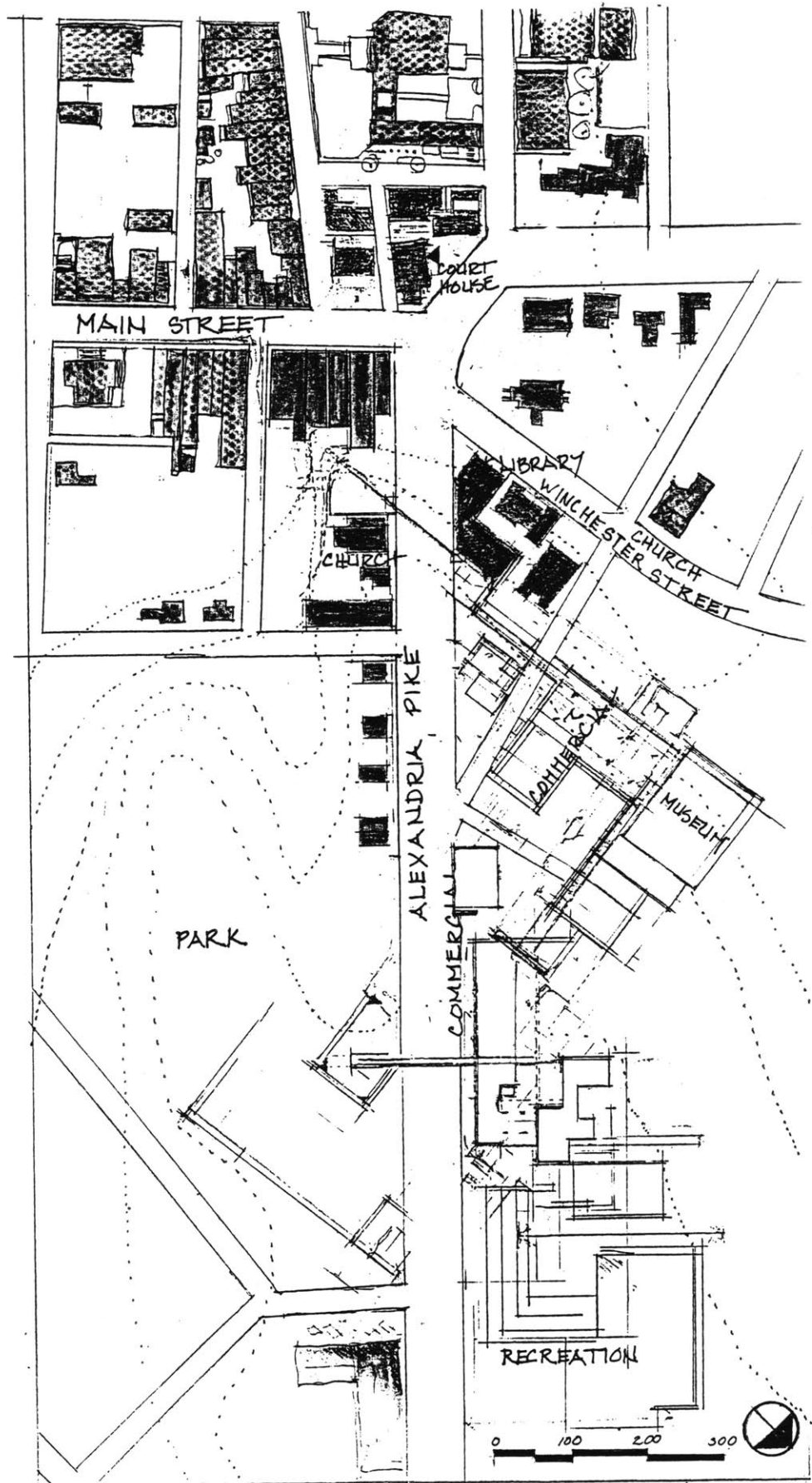
The history of the built form is that it is in a constant state of transformation. The provision of forms which guide development today may be memories of tomorrow's environment yet it is vital to retain the sense of special places, in particular in conjunction with the nature of structures for public use.

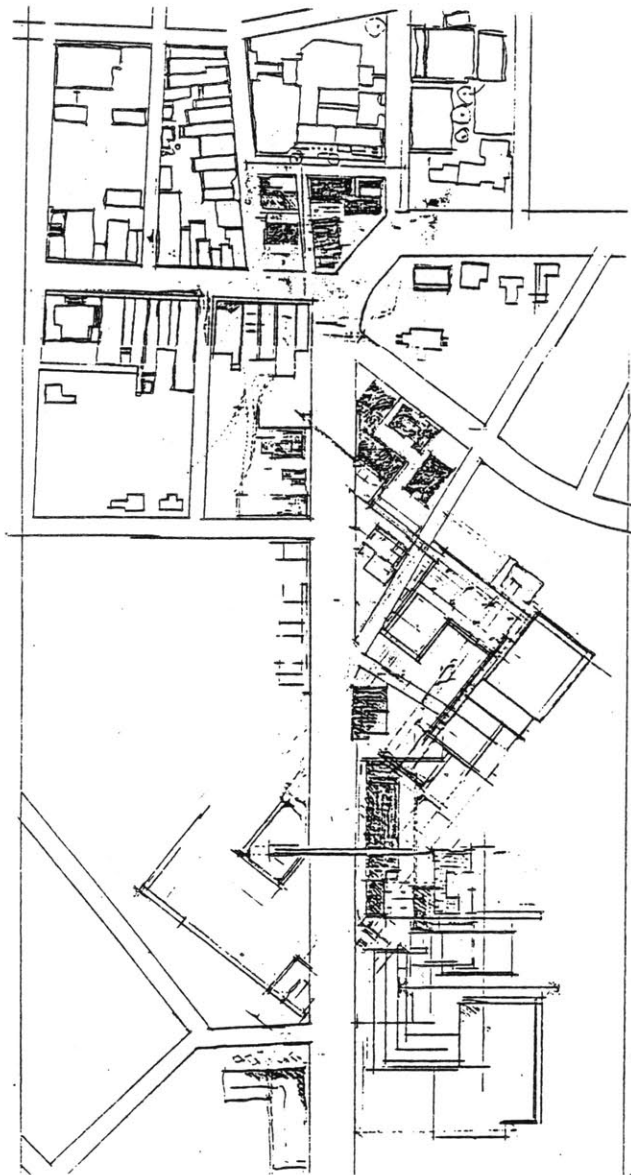


Warrenton

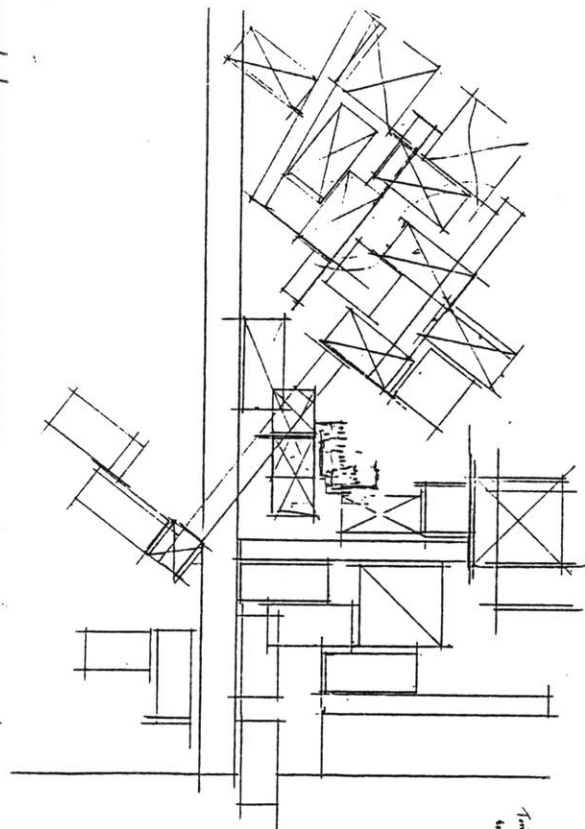
The form of space and passage between public and private uses determines the accessibility of buildings and connections. The commercial edges as well as the parks need to invite use. The site is open to the public at all times. The museum/library on the other hand is a building that is both public and private simultaneously. Special requirements include security and separation from the open public spaces.

Similar associations of the duality in use and form are found in the form of arcades, chosen for one part of the building commercial edge. The transformation of this typology has, in the past, generated the difference between a prison and an open street. The key differences lie in the forms of entry and exist and the varying restrictions placed on movement within the system. Similar to street design, the permanent and transitional elements are planned. Individual elements in the general framework are allowed to develop their own characteristics.

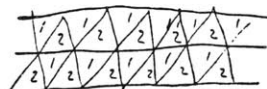
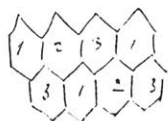
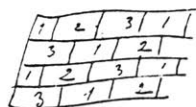
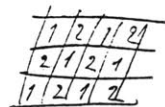
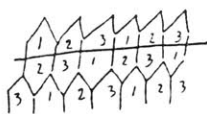


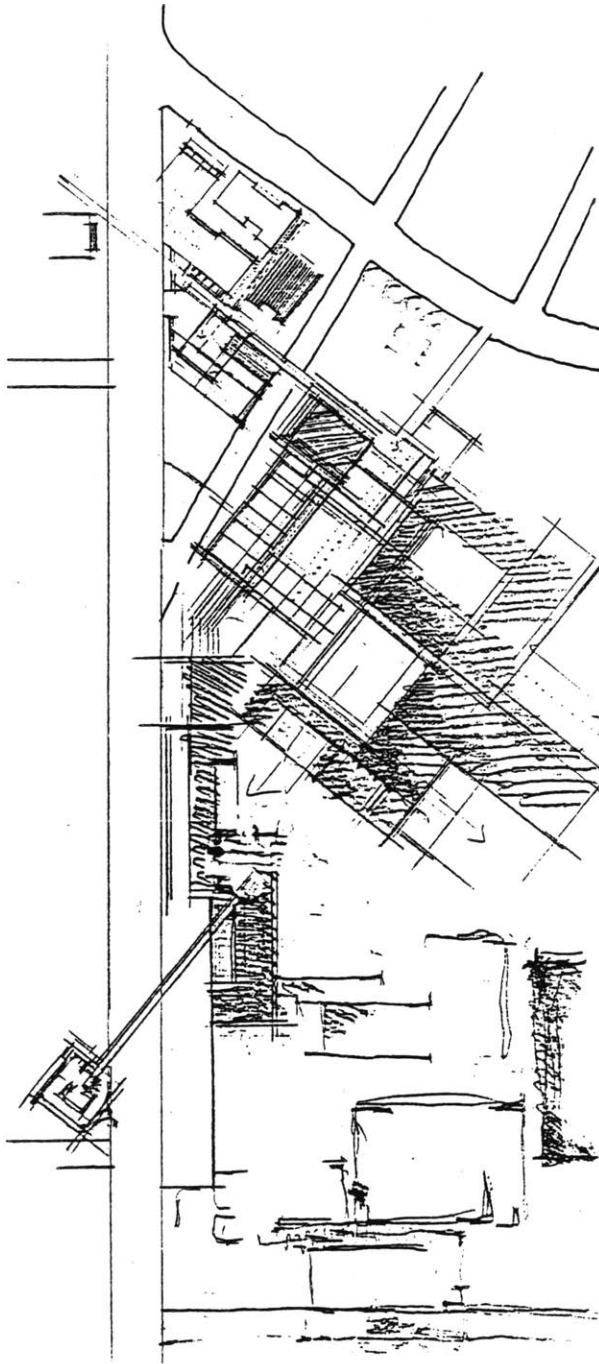


Site organization

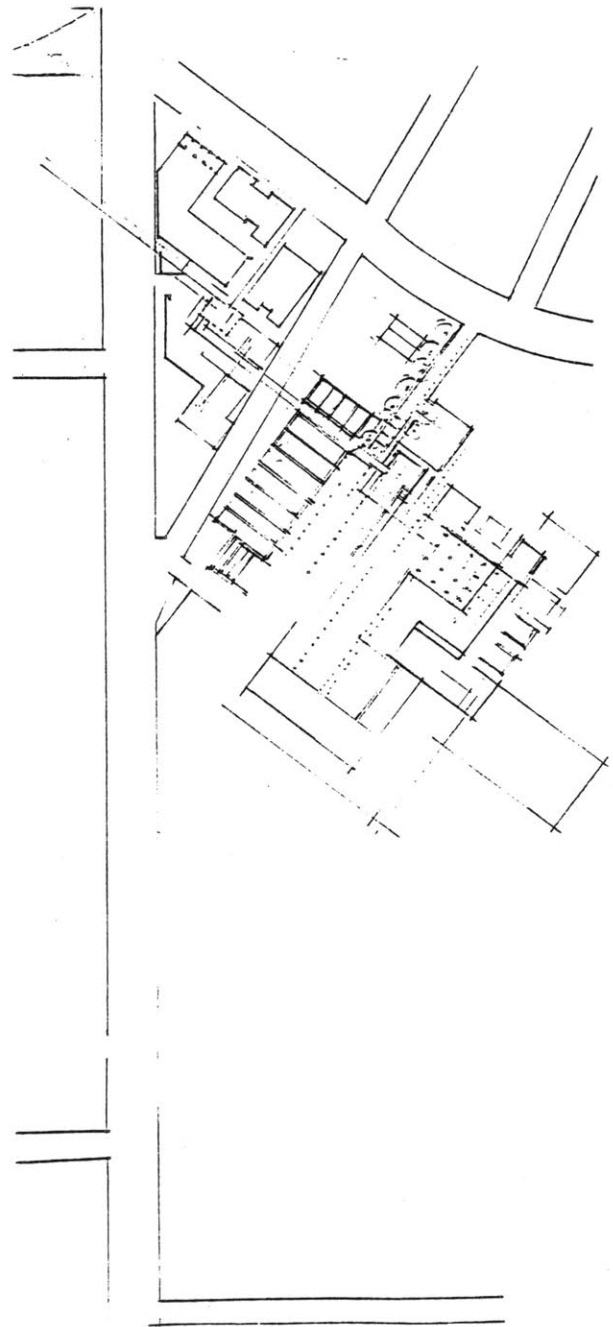


Territorial packing



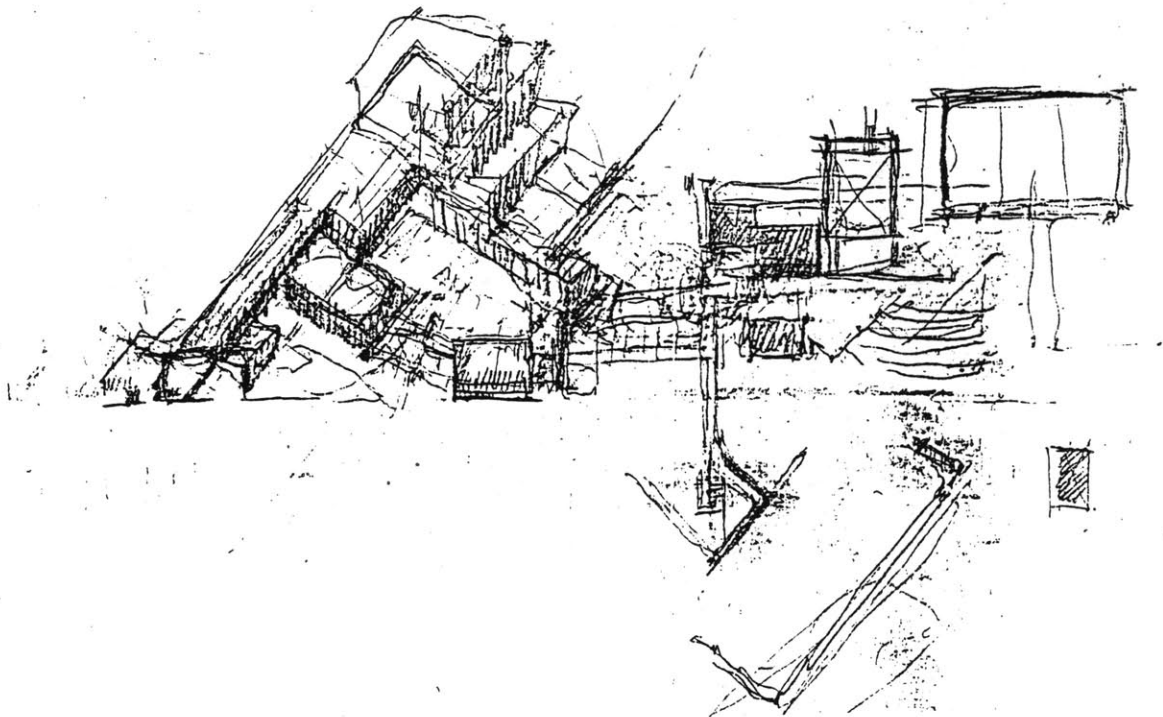
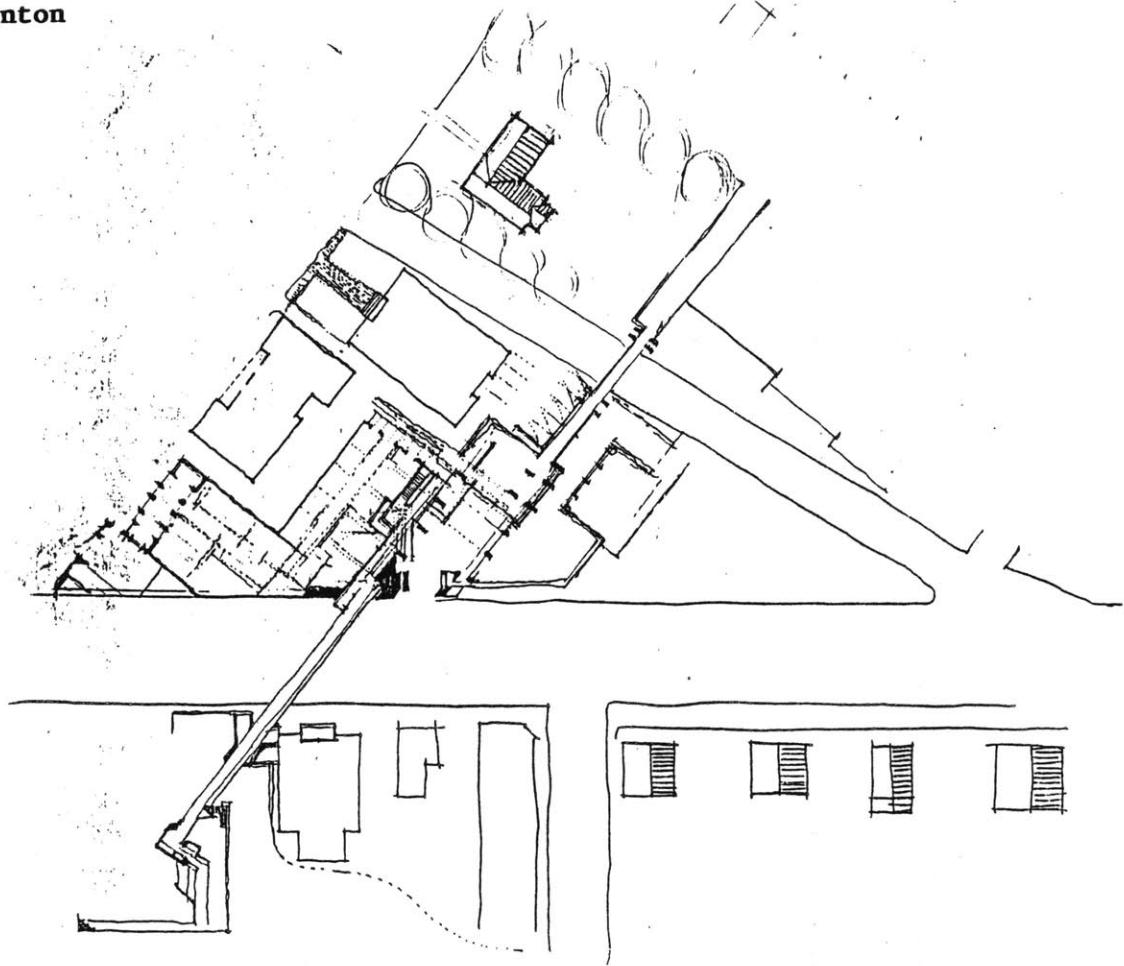


Development of the building forms
superimposed on the territory
diagram

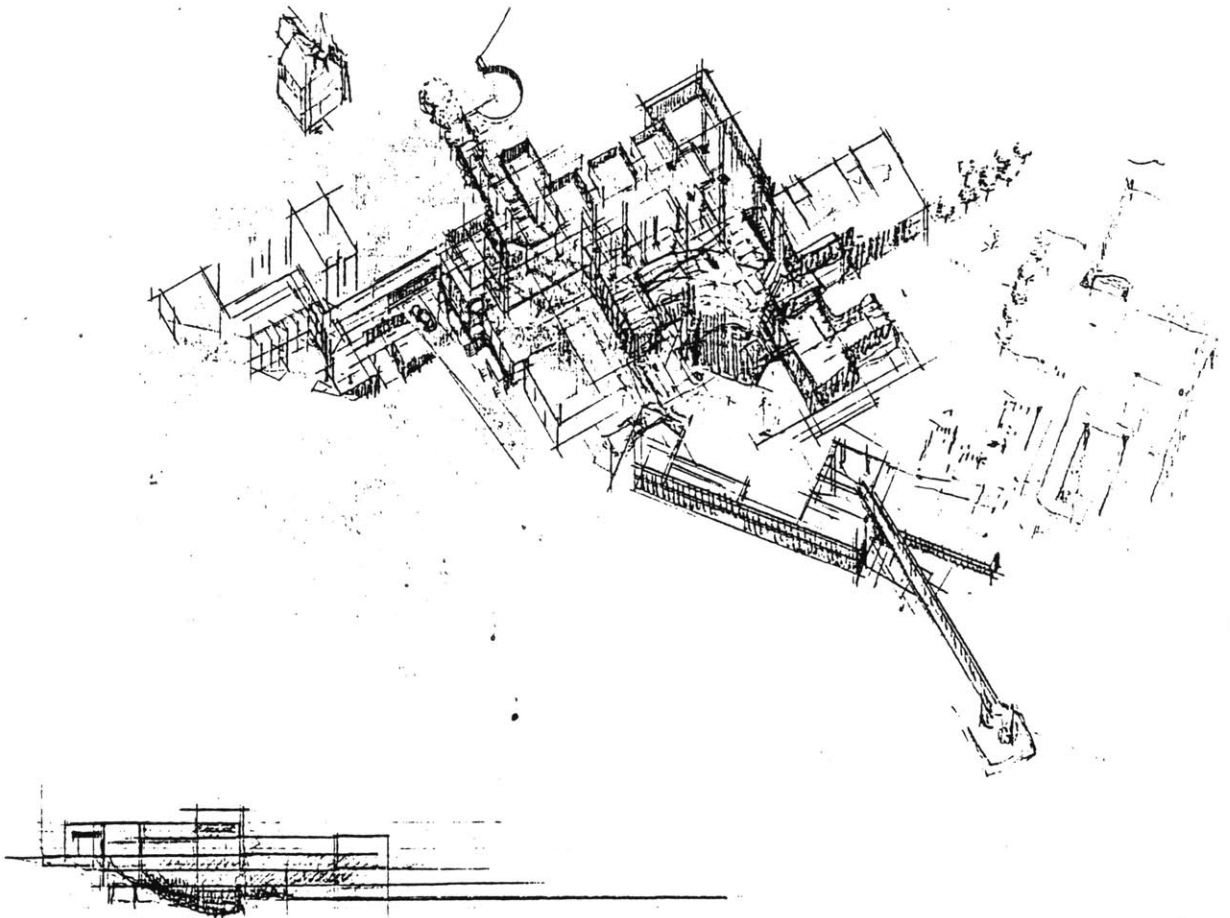
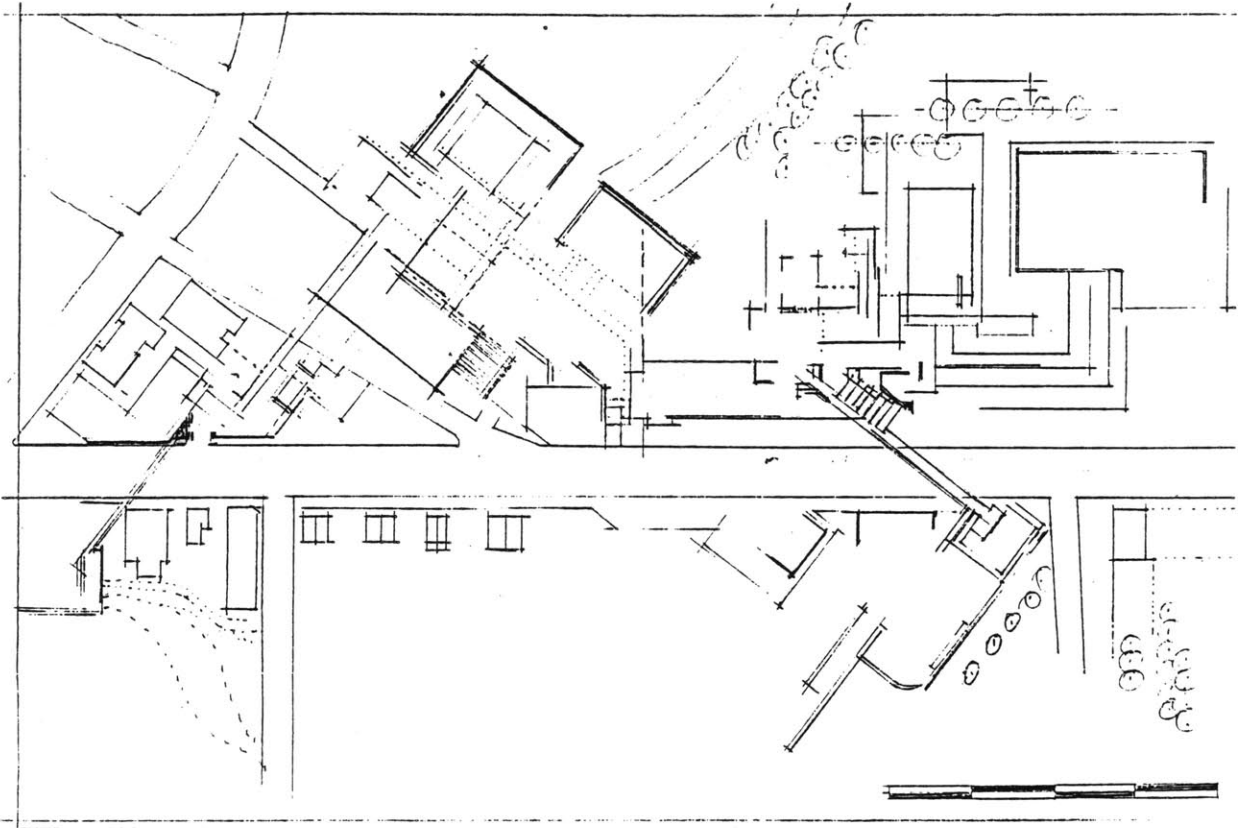


pedestrian access

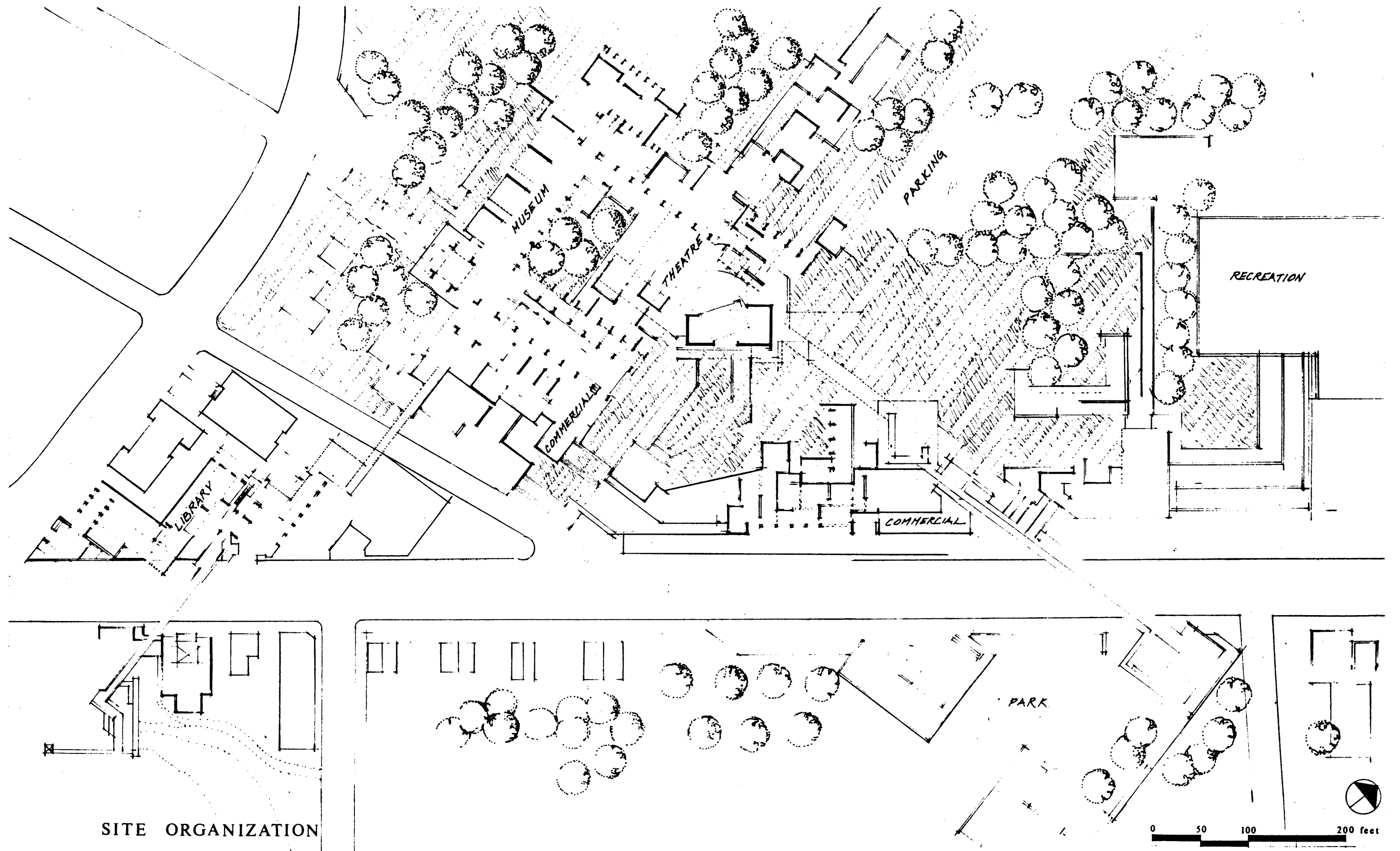
Warrenton



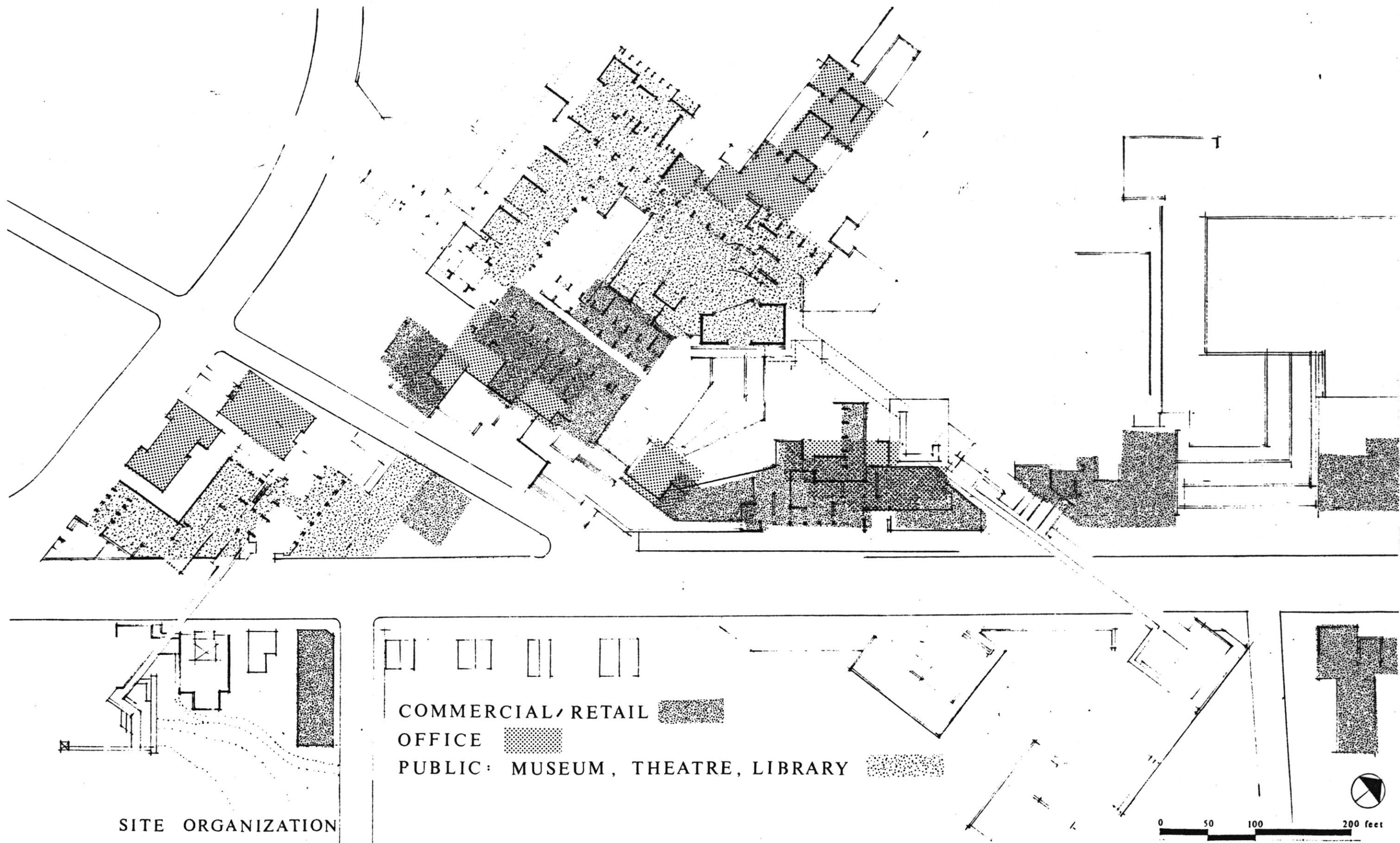
connections, extensions and bounding edges







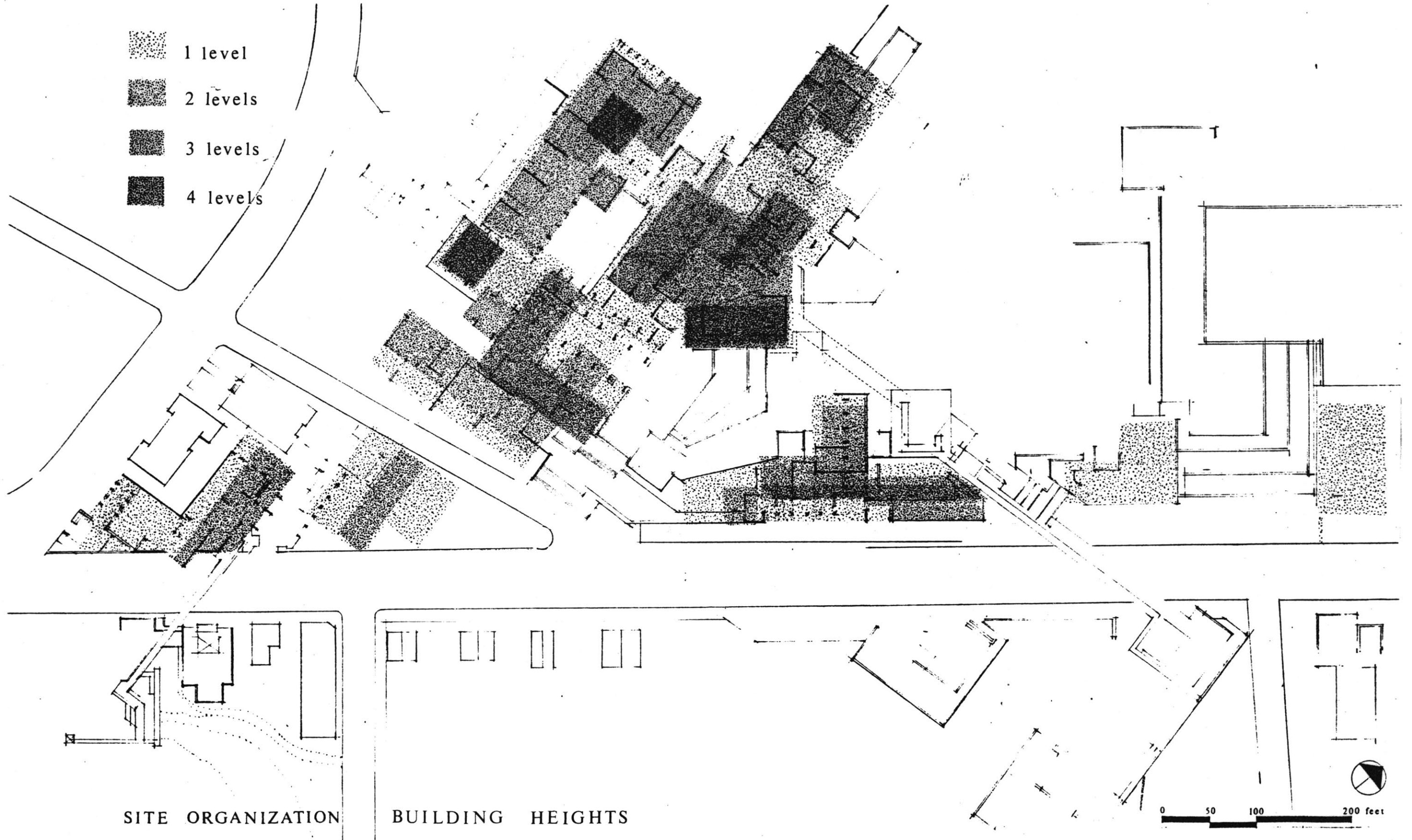
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SITE ORGANIZATION



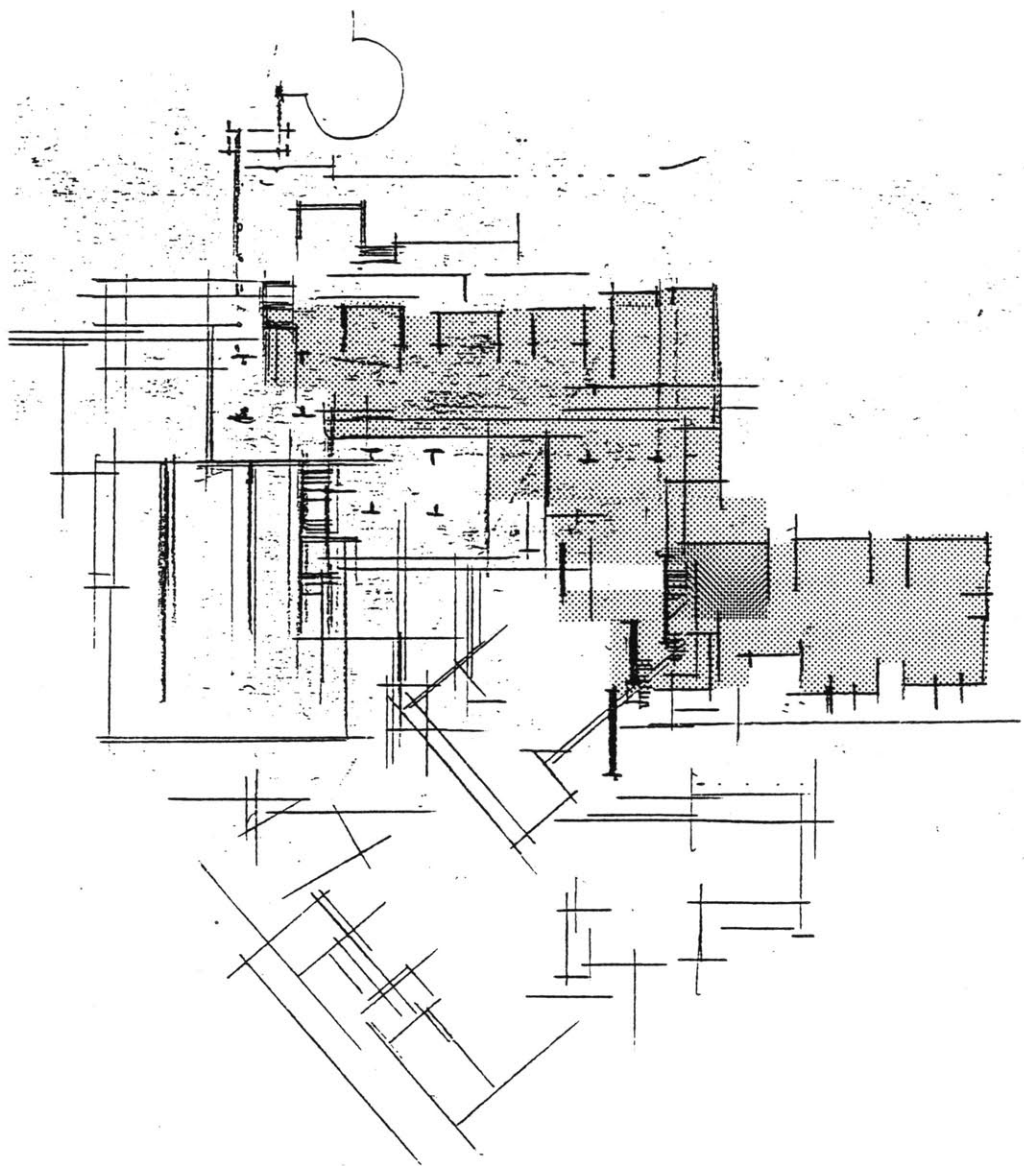
-  1 level
-  2 levels
-  3 levels
-  4 levels



SITE ORGANIZATION

BUILDING HEIGHTS

THE BUILT TERRITORIES



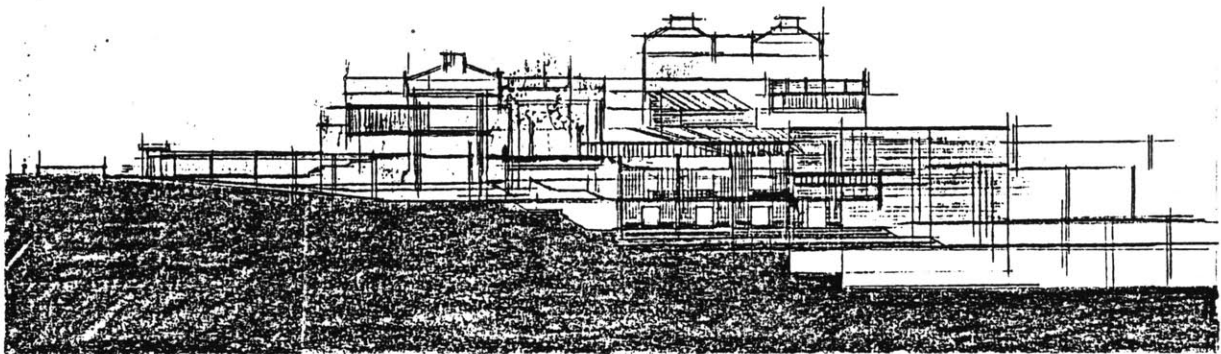
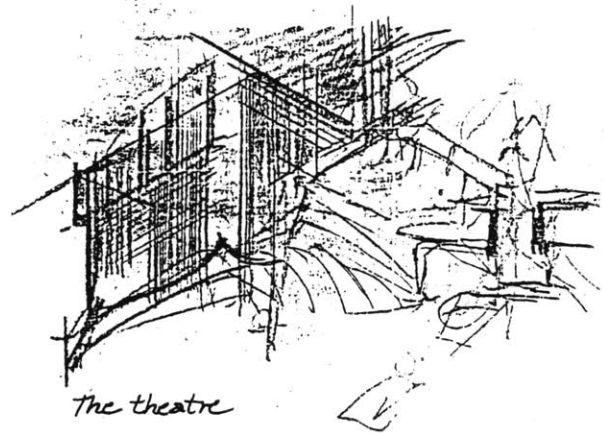
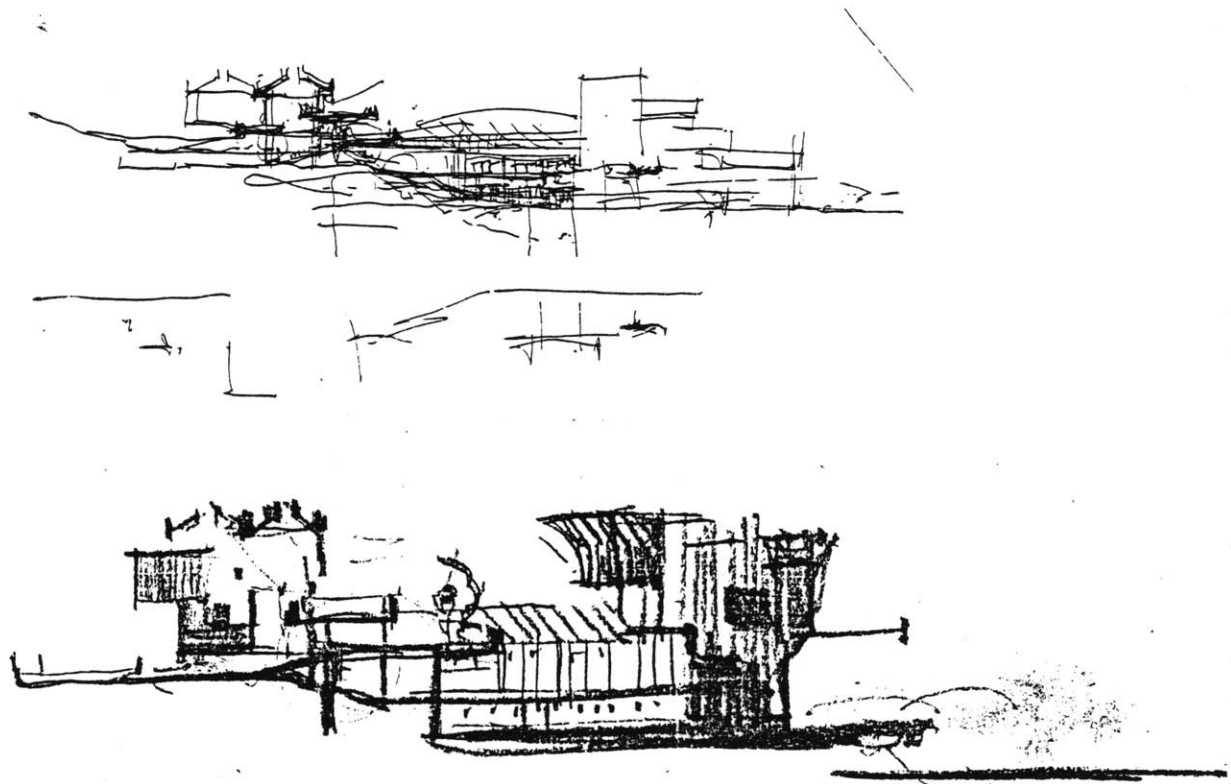
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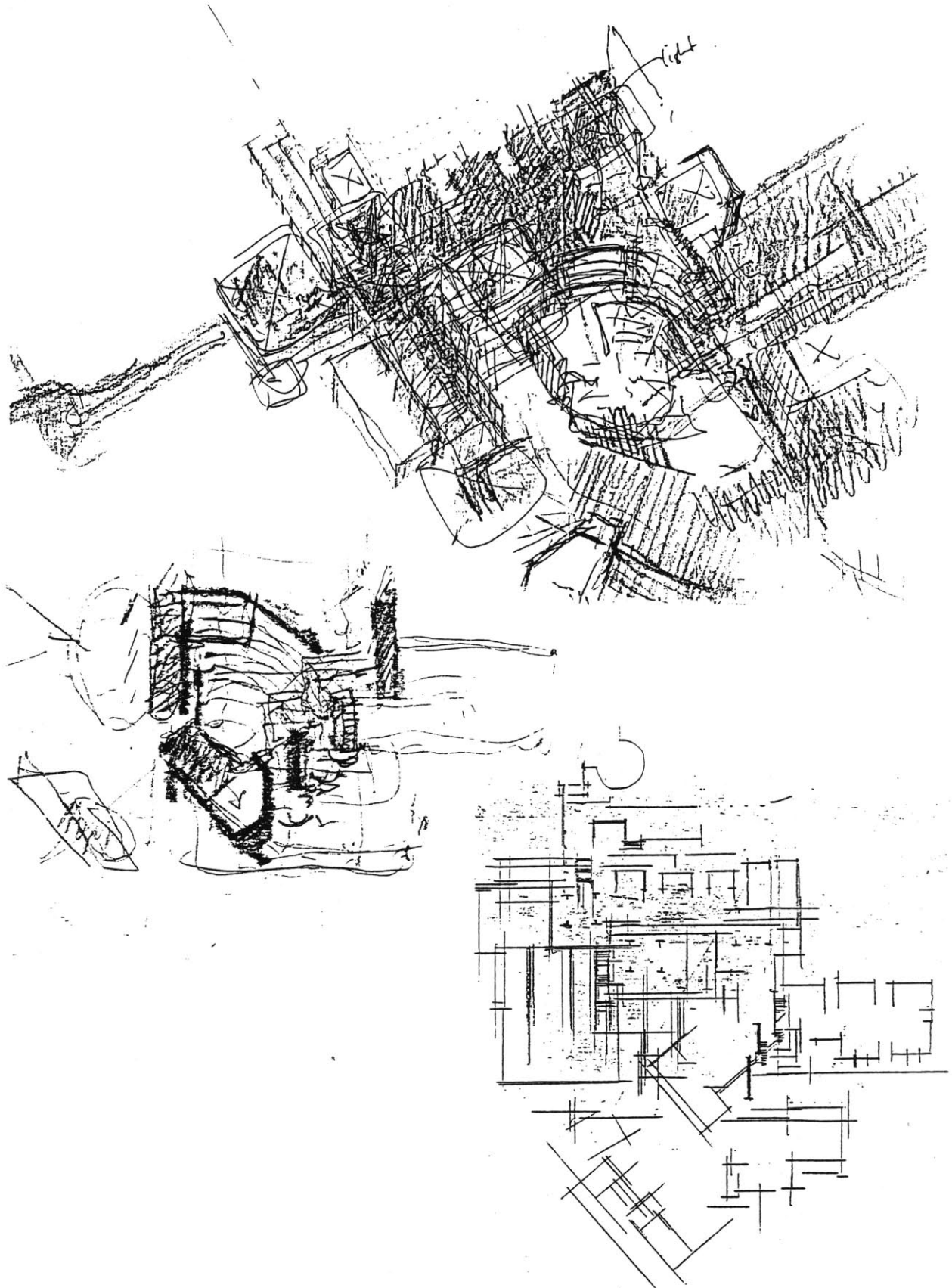
At the building size, the museum/library defines past, present and possibly the future by the forms of its organization and its interaction with the fabric of the town. The past is reflected in the collections and exhibits. The landscape elements and built forms of past occupants that are retained serve as reminders of where we have been.

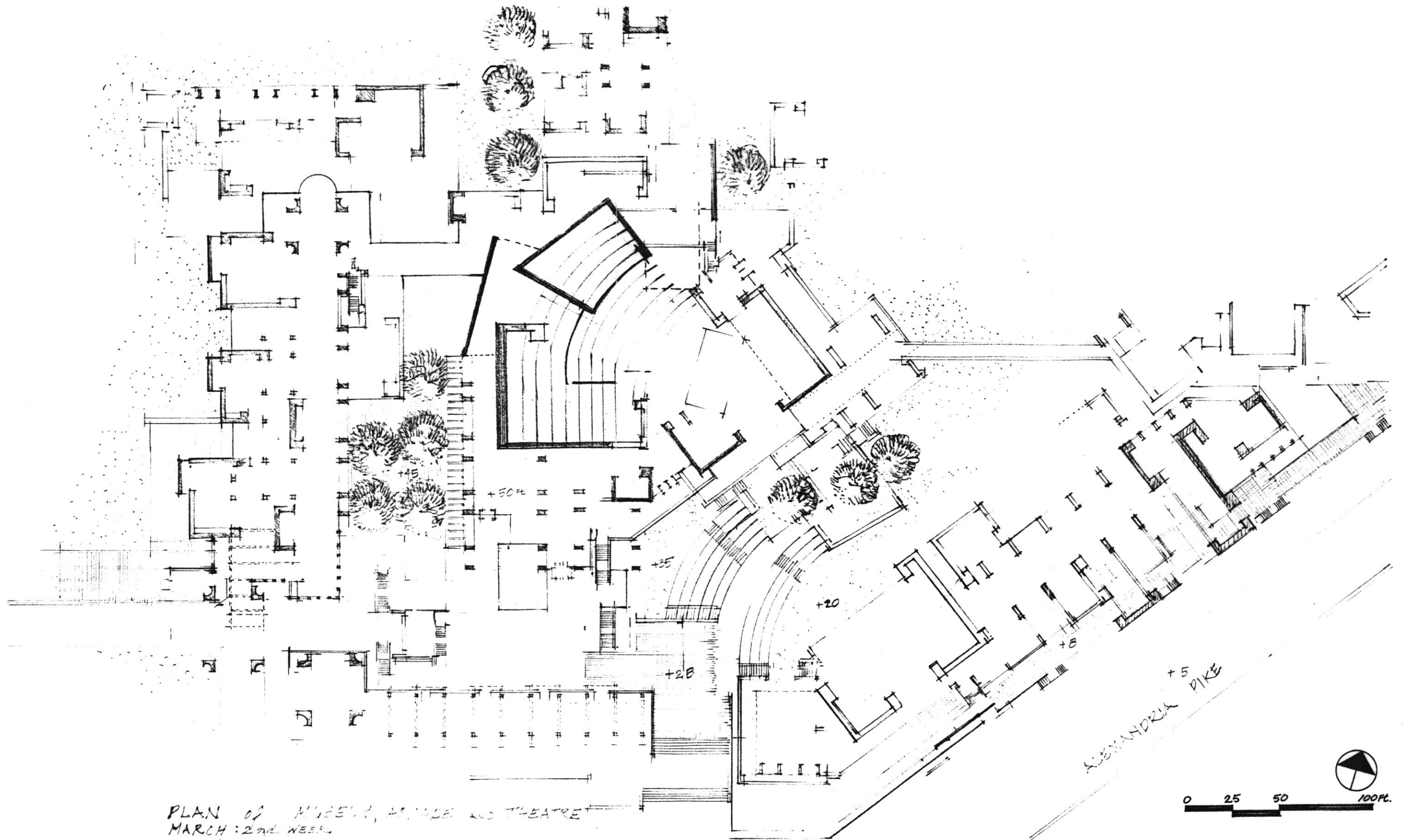
The present is reflected in the buildings and their daily use. Housing and commercial uses as well as the museum/library must function together. These encompass the elements that the building gives to the street as well as the shapes of spaces to be enjoyed within the buildings. The present evolves around the perception of time, the passage of a day and the changing light or the transition of materials through age, the juxtaposition of new to old. The future of the built forms goes beyond the the works that the buildings hold, or present functional demands.

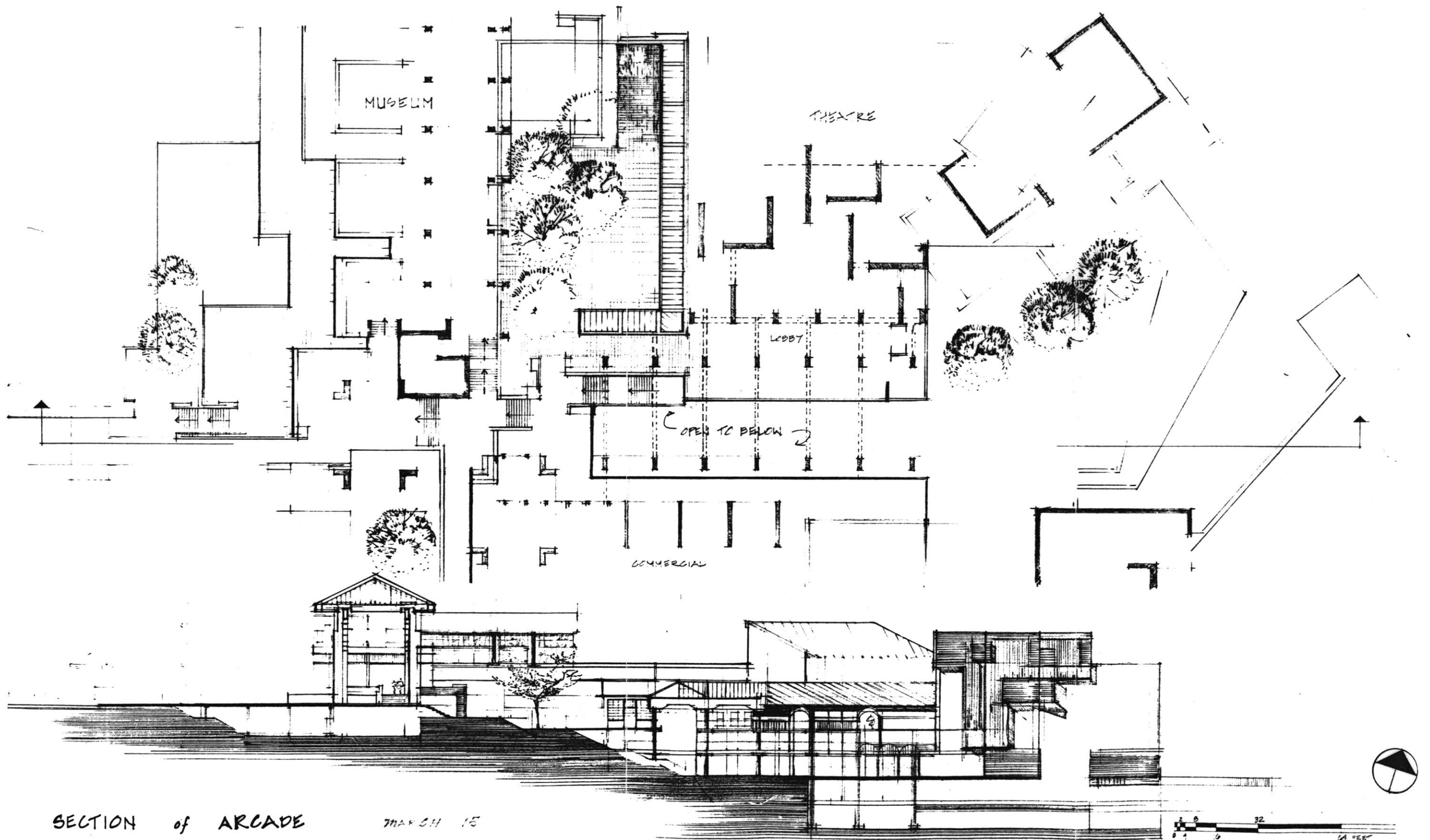
Immediate future demands are met in flexible spaces that allow for changes of partition wall systems,

for exhibitions or housing alternatives. In planning for these anticipated changes, passages and means of access on the site and building may take on more permanent forms and may be specifically designed to meet those needs.

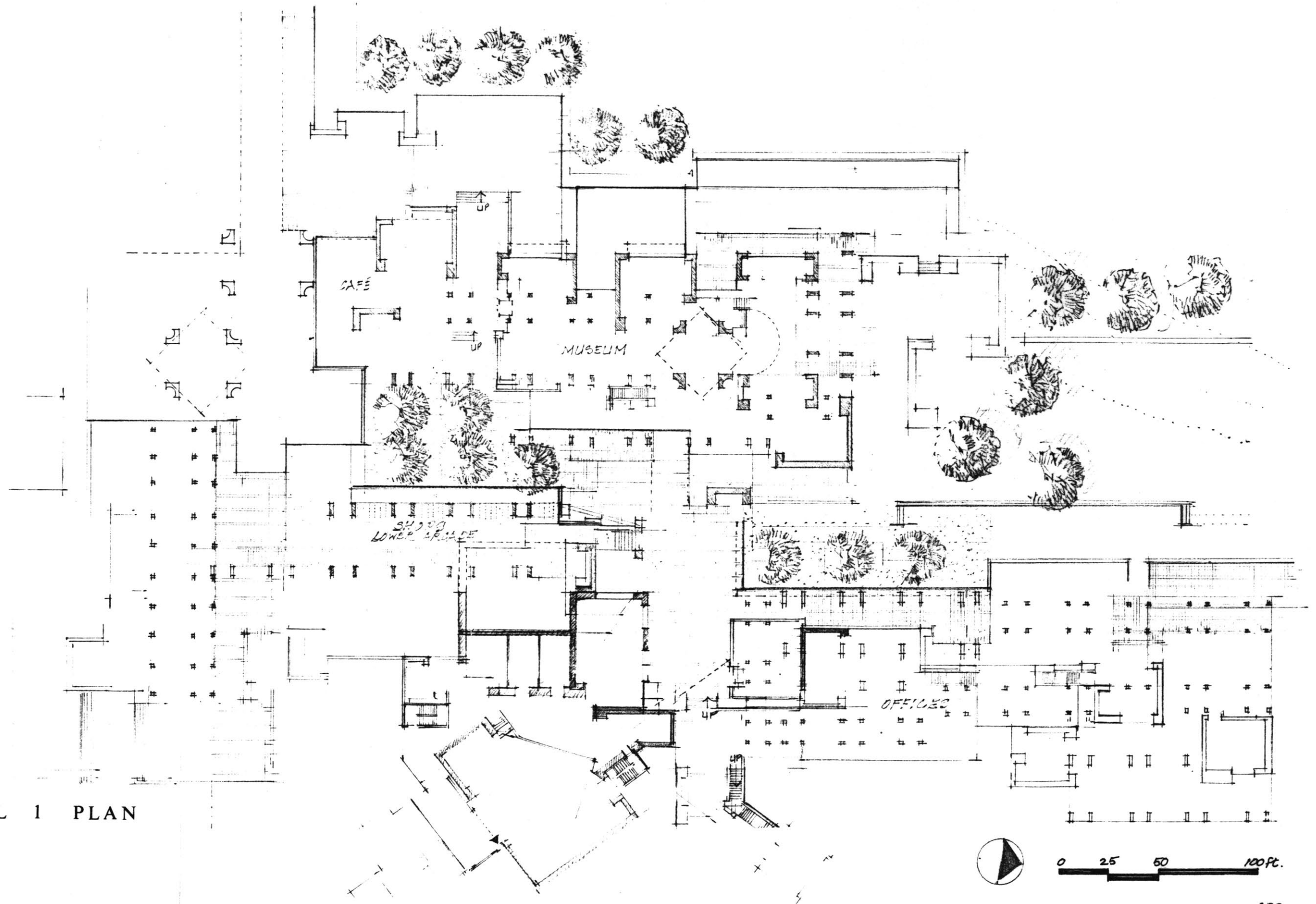


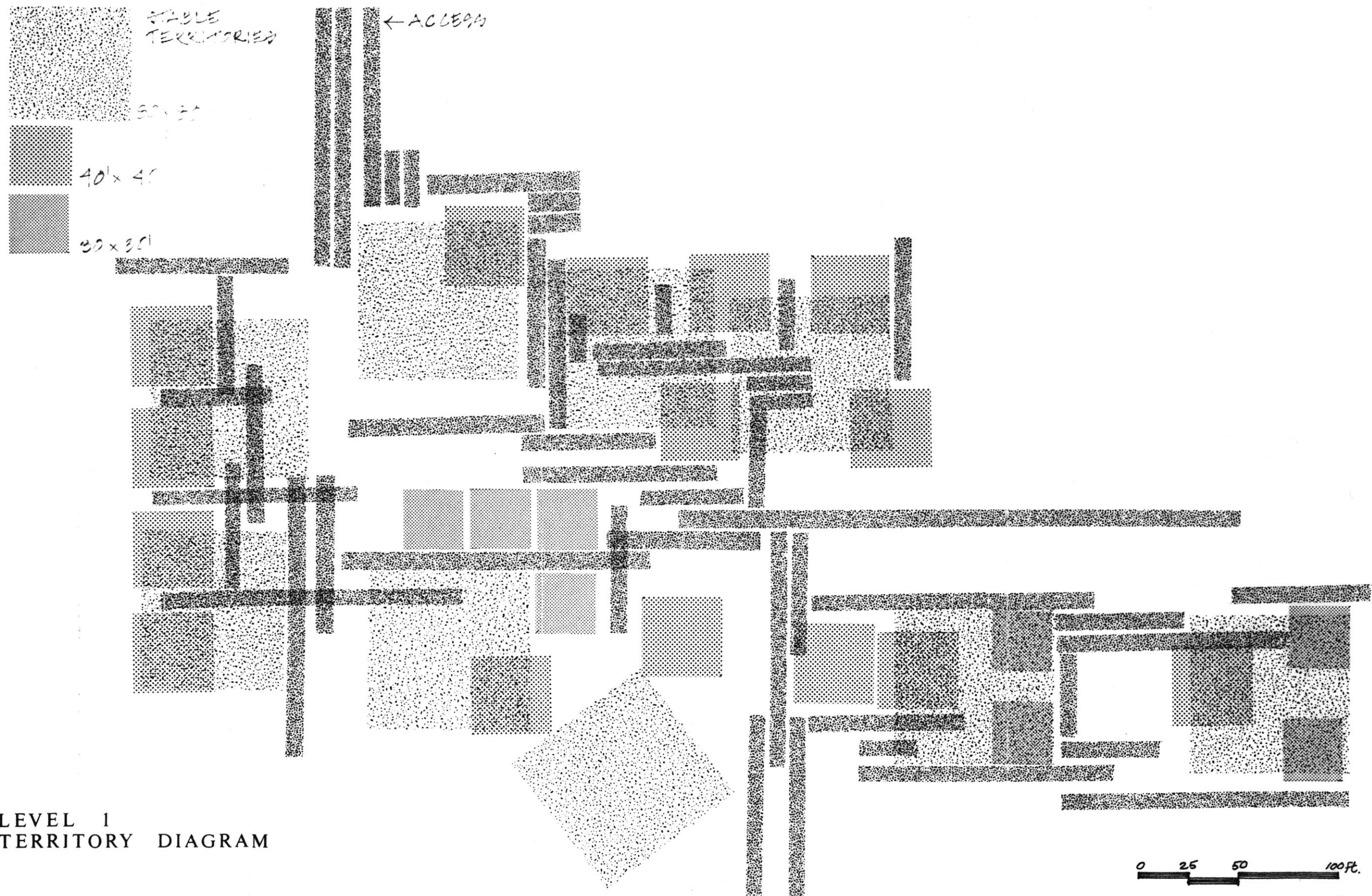




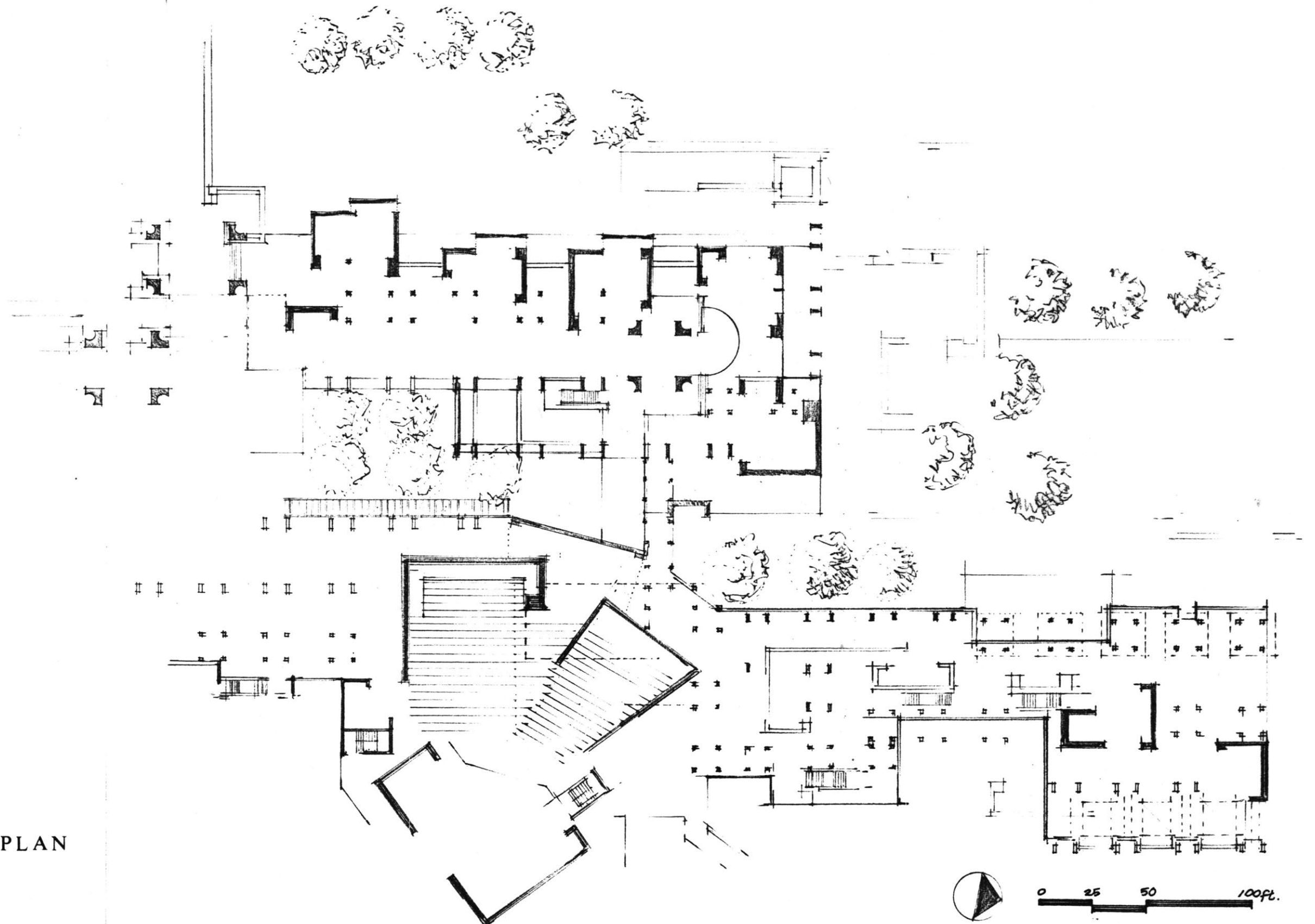


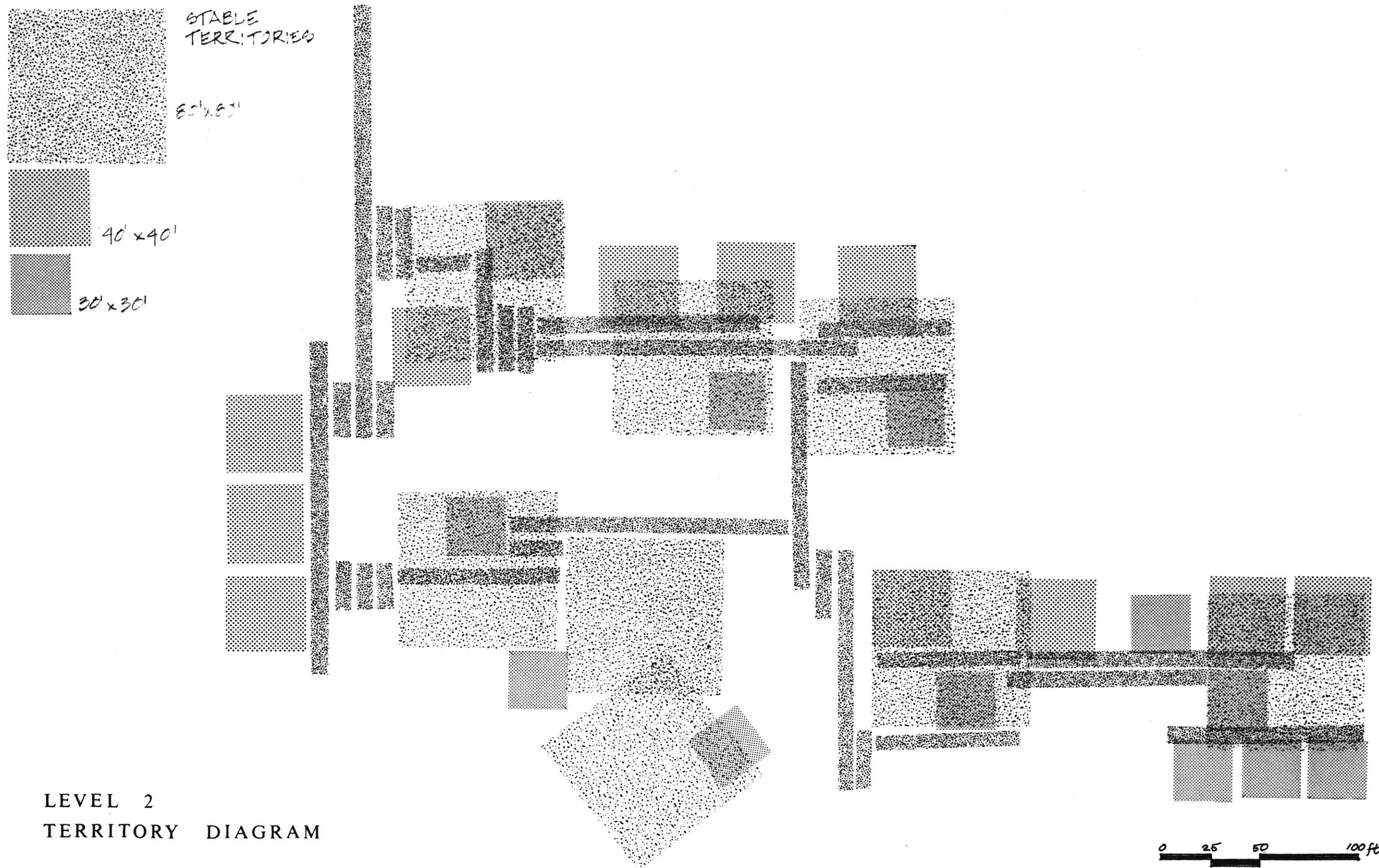
LEVEL 1 PLAN

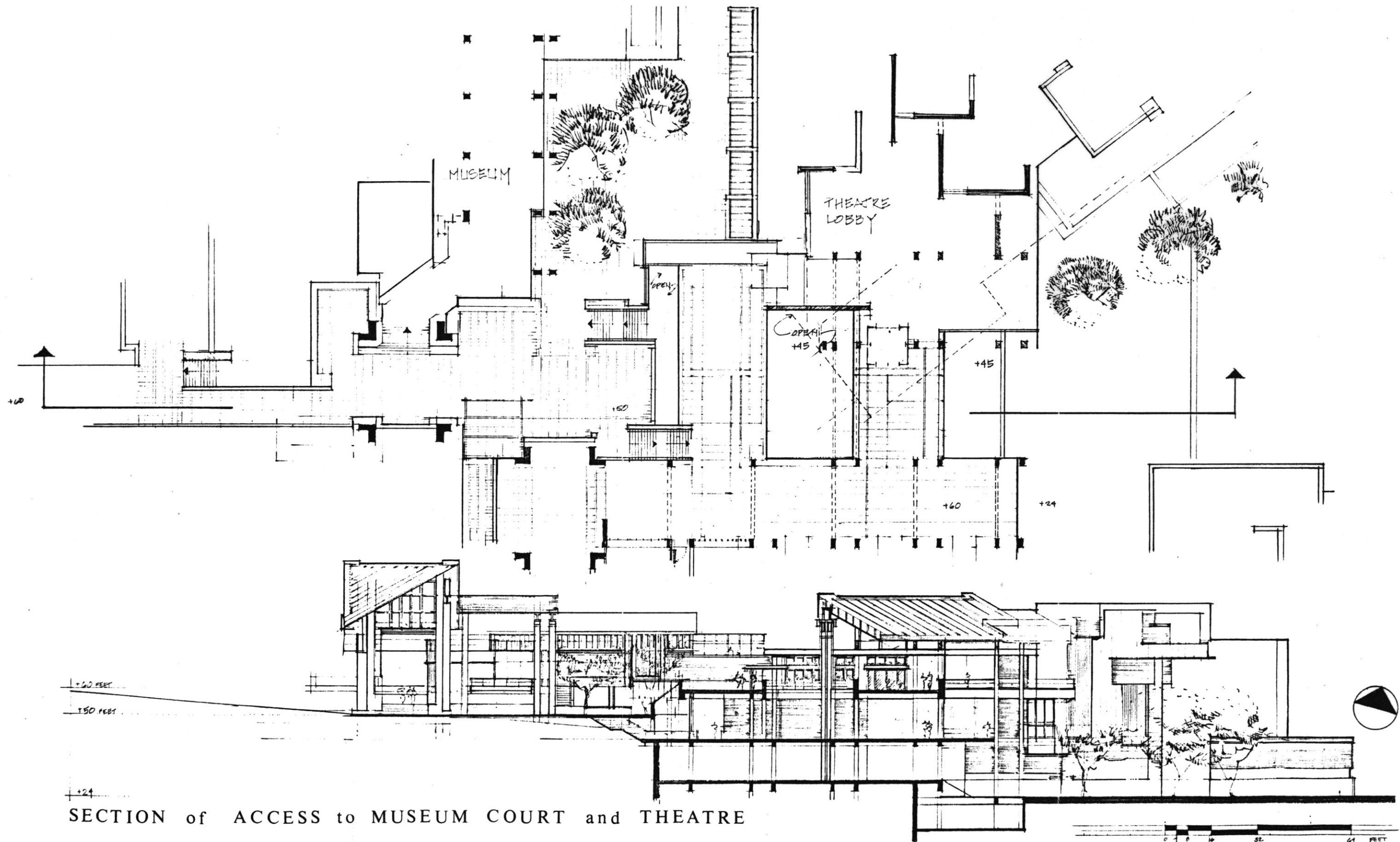




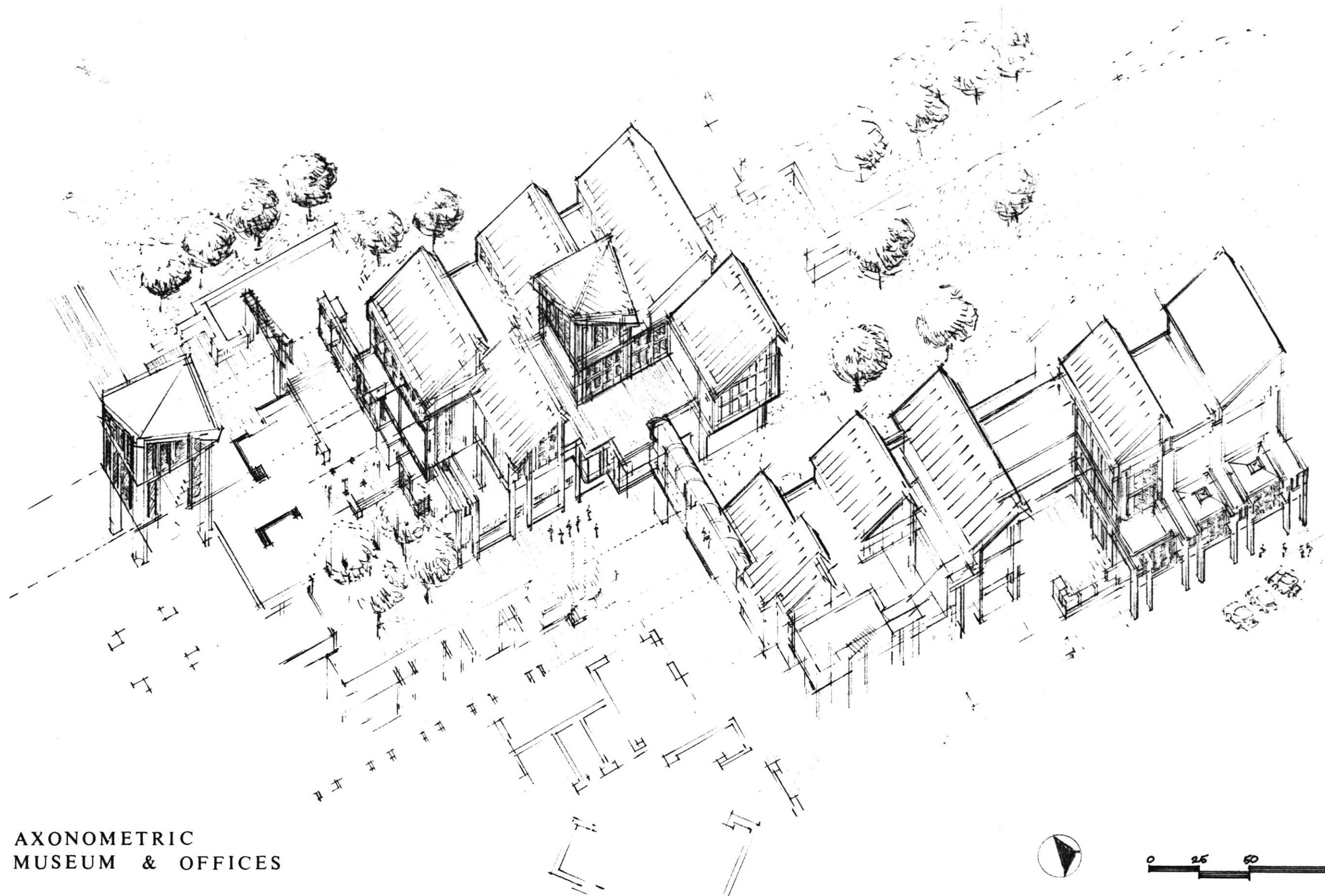
LEVEL 2 PLAN







SECTION of ACCESS to MUSEUM COURT and THEATRE

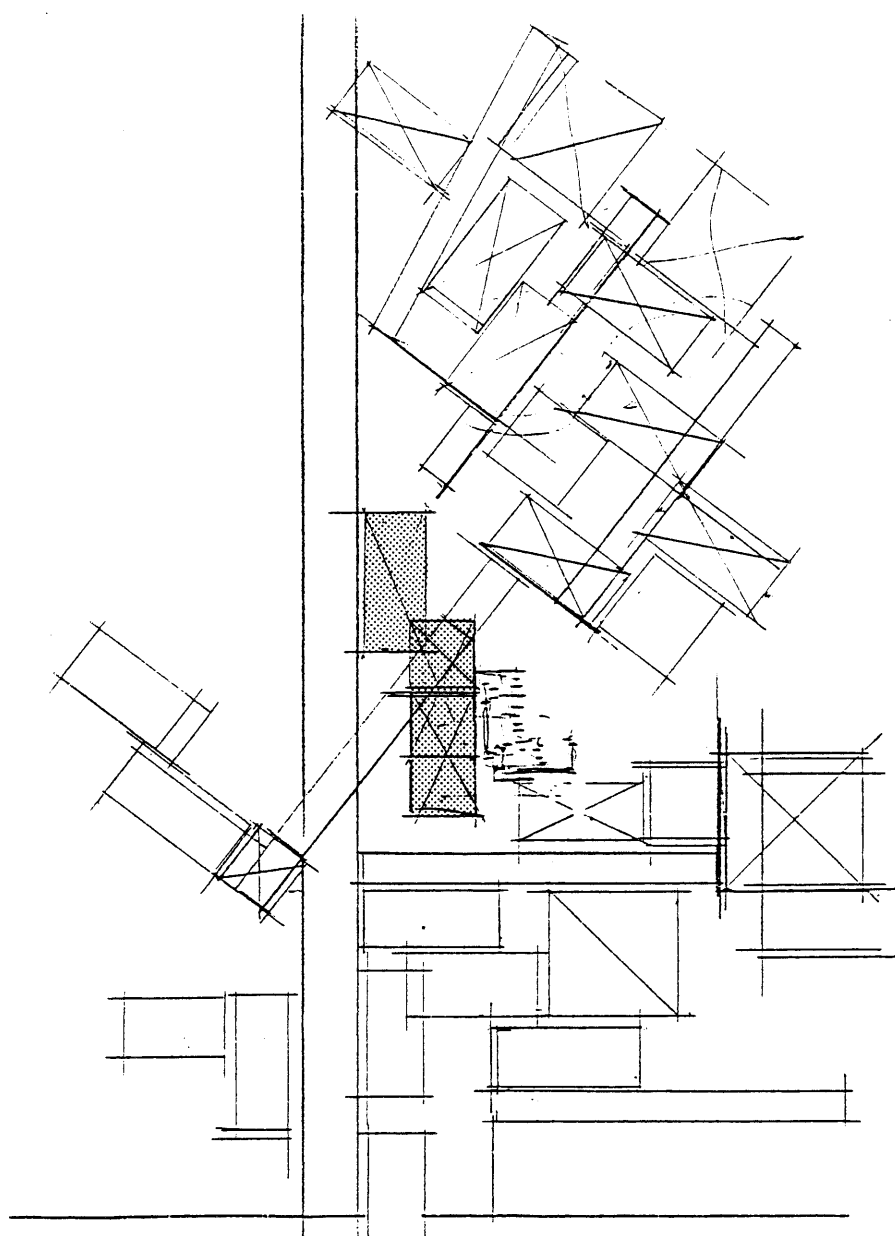


AXONOMETRIC
MUSEUM & OFFICES



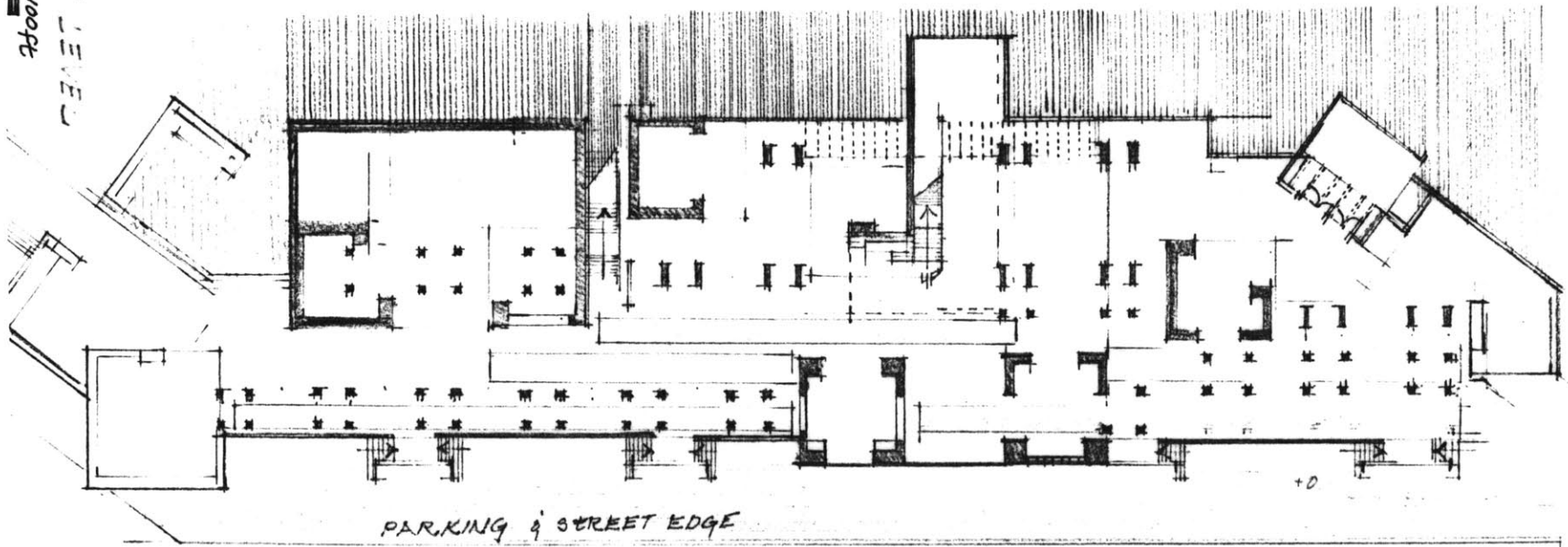
0 25 50 100ft.

Commercial building study

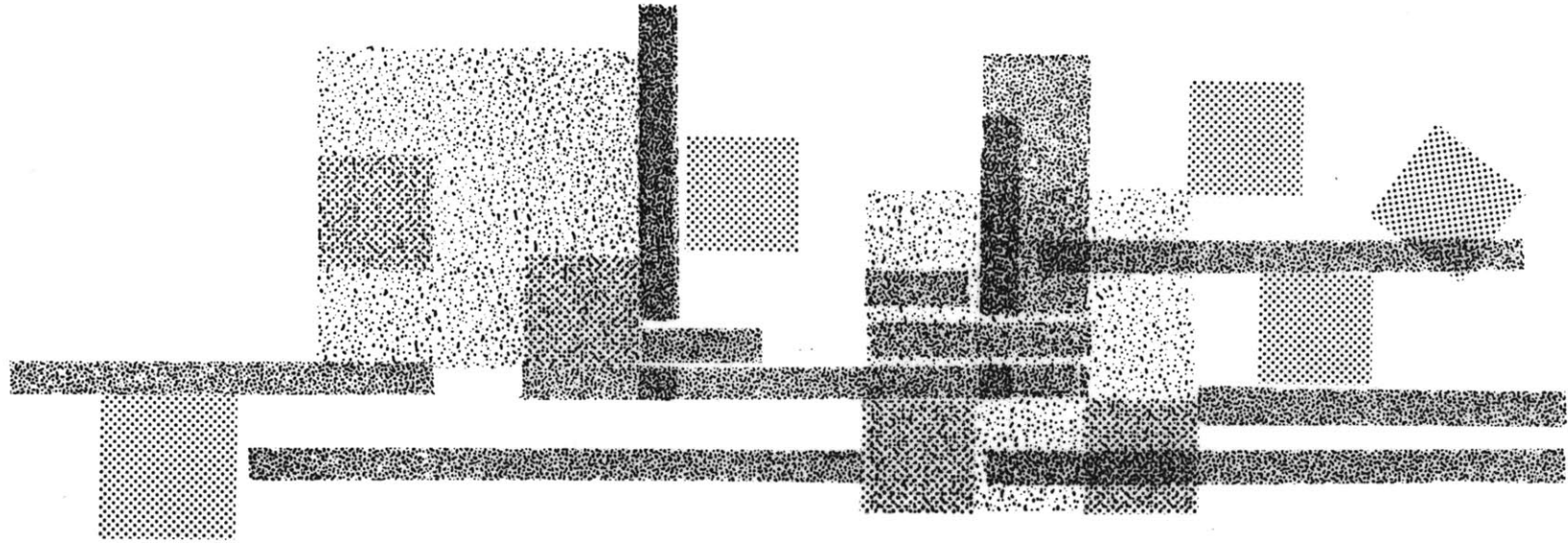




PLAN AT STREET LEVEL
0 25 50 100ft

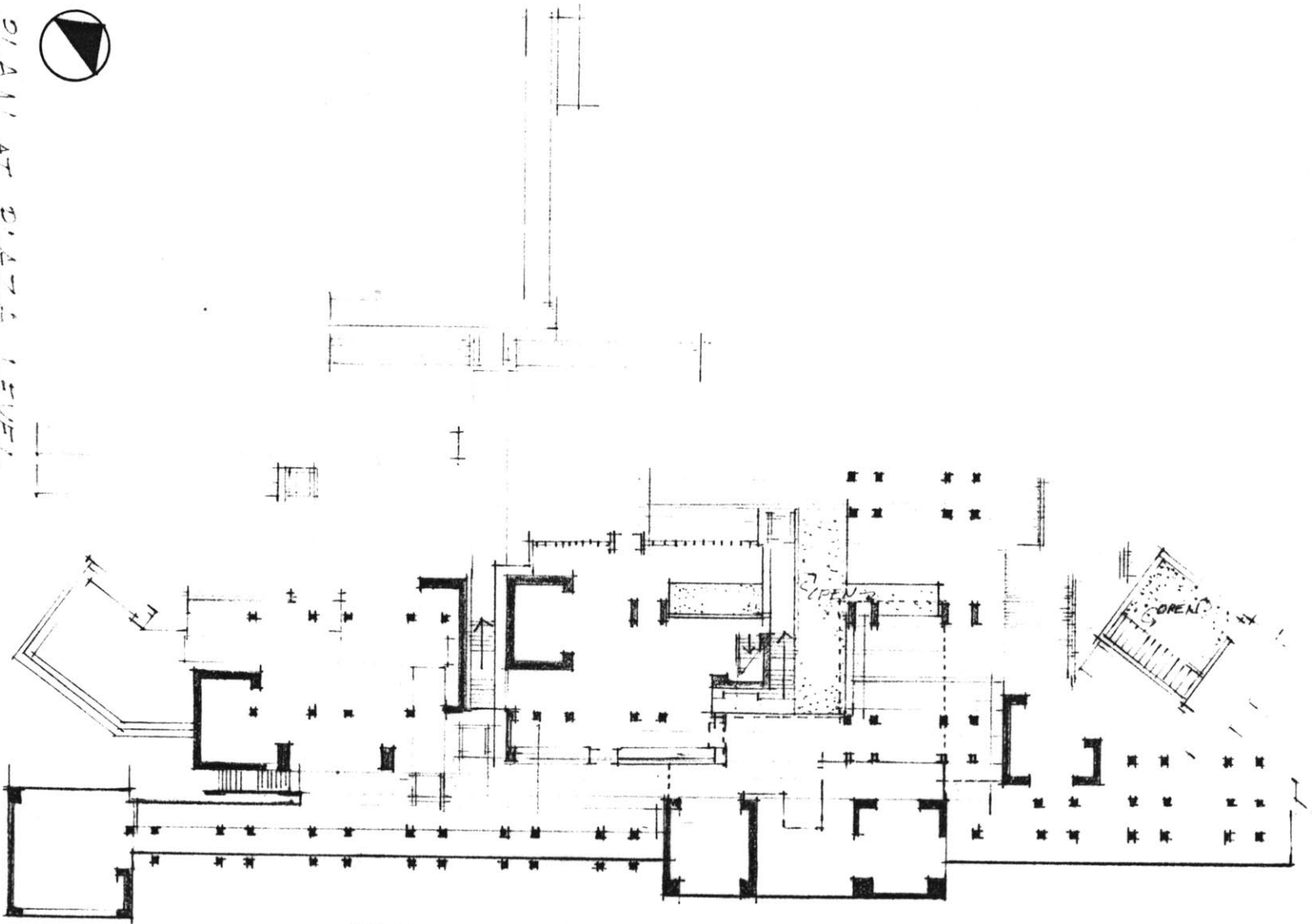


ALEXANDRIA PIKE

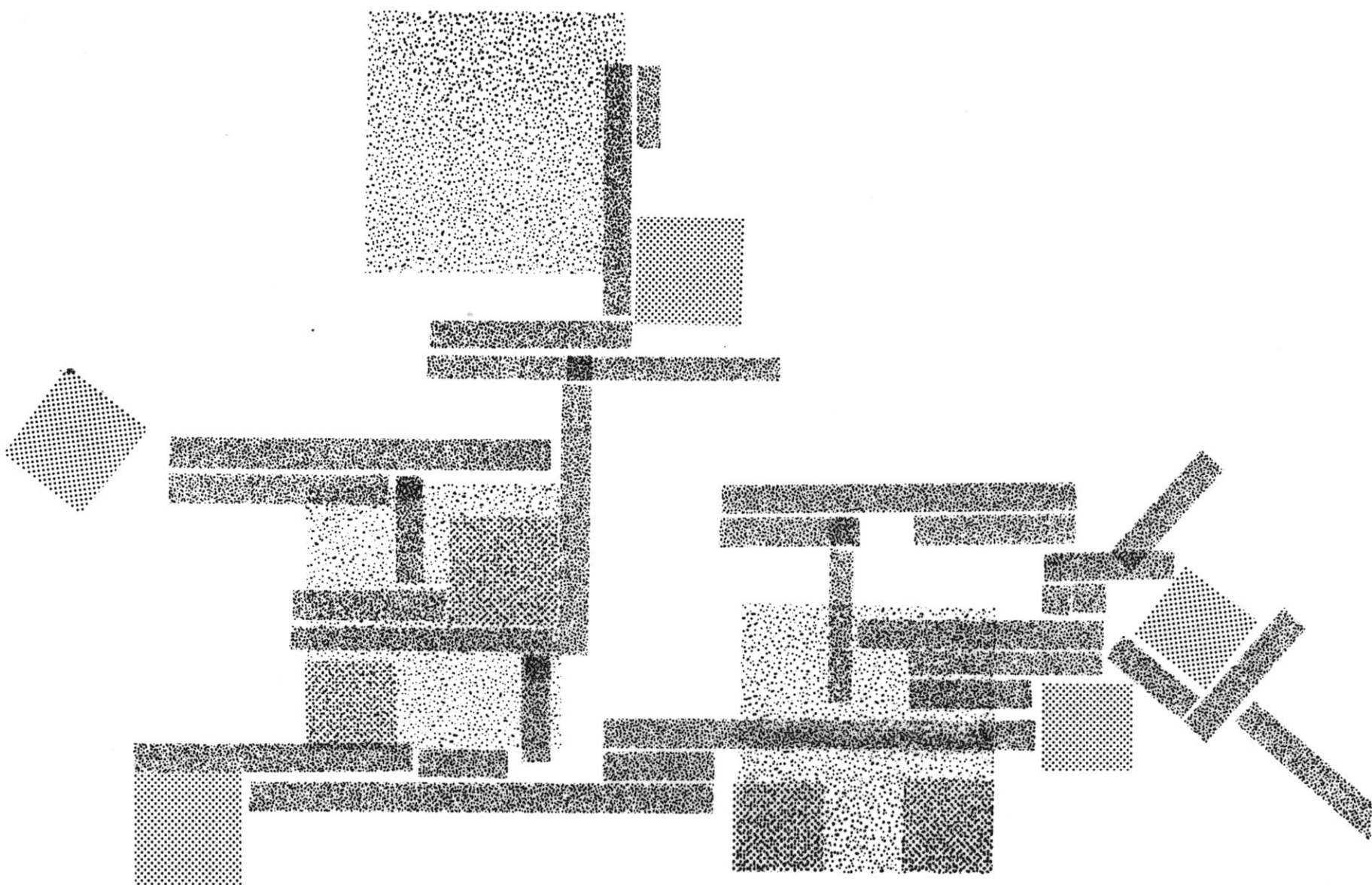




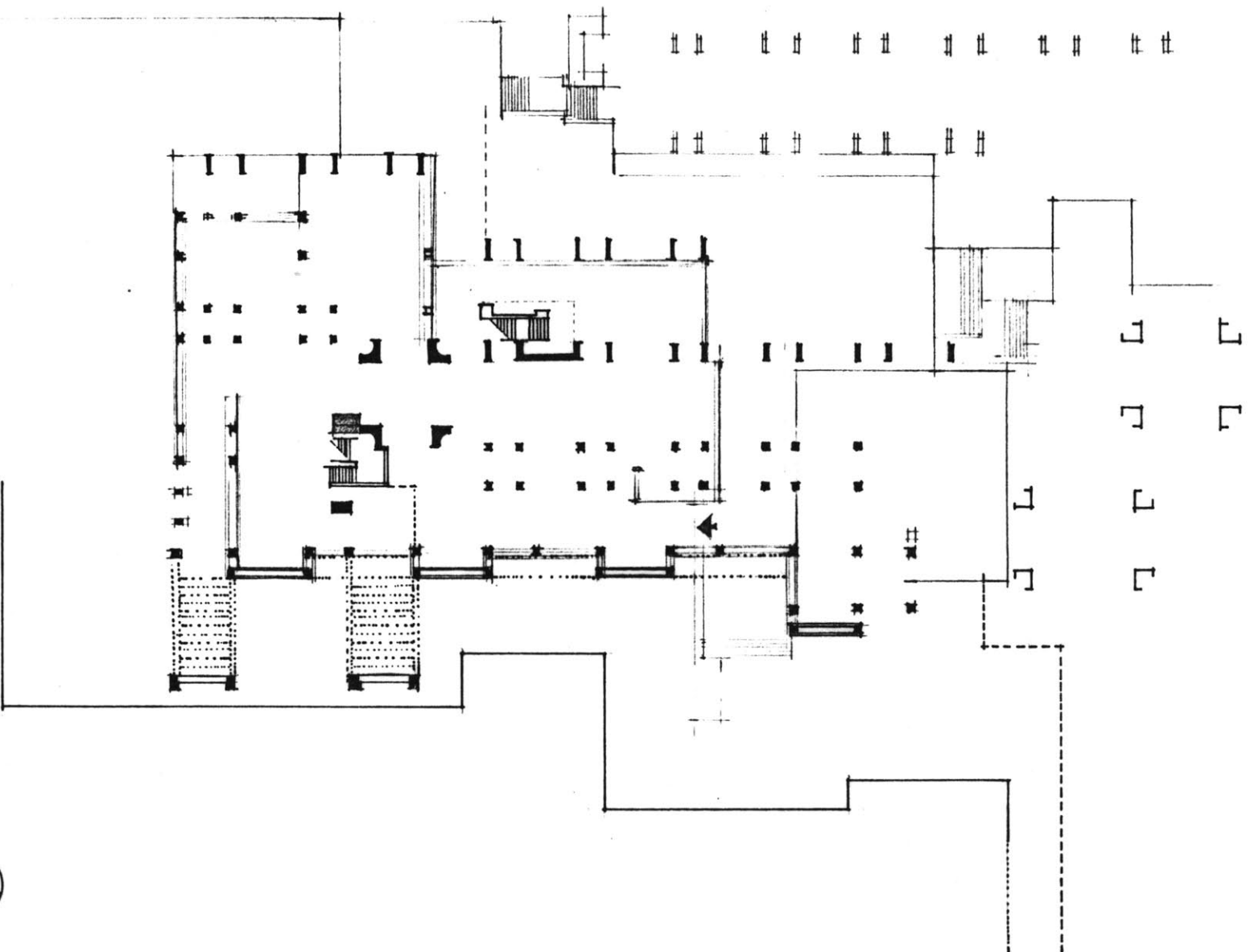
PLAN AT PLAZA LEVEL
0 25 50 100 Ft.



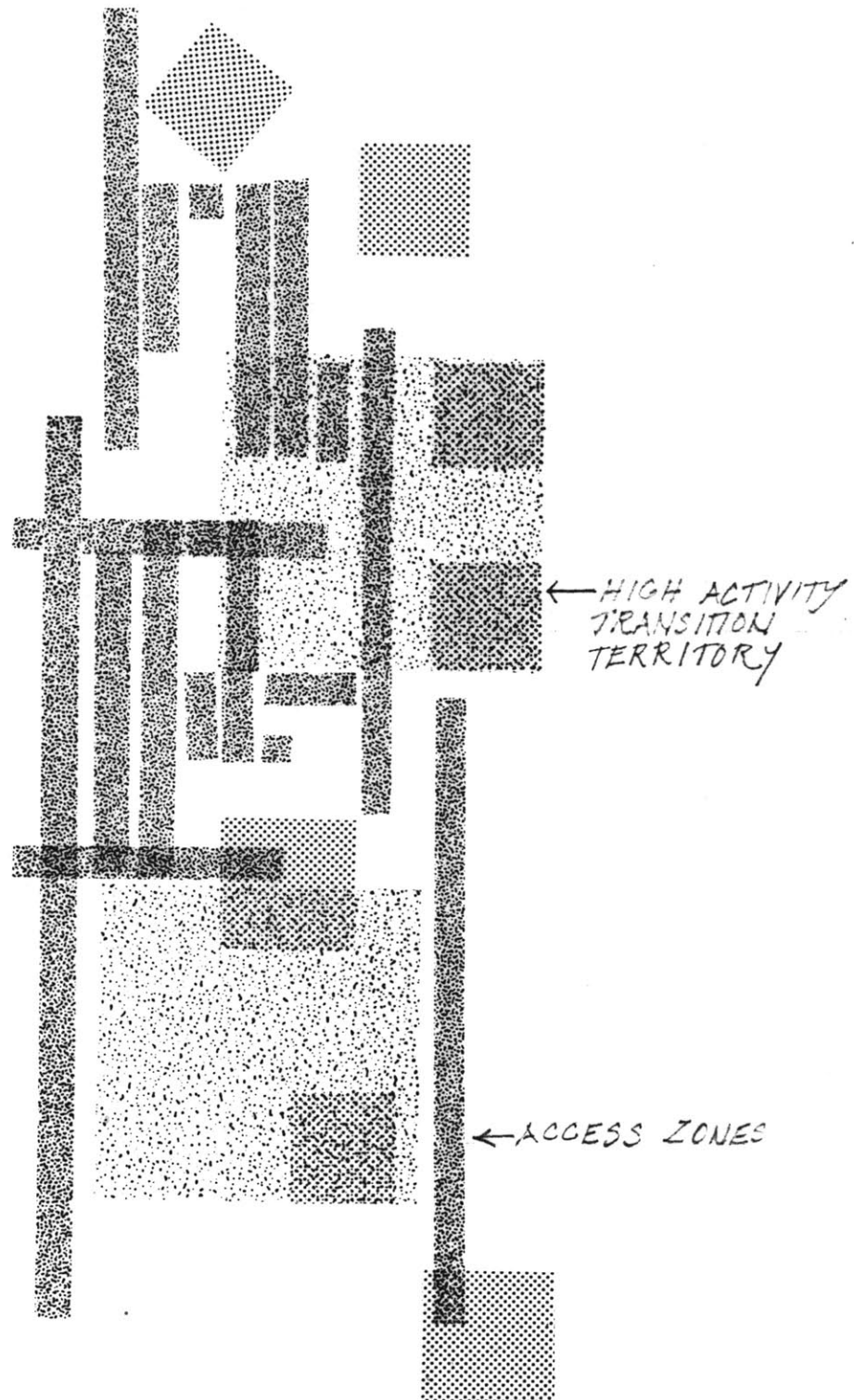
STREET EDGE



ALTERVATE MUSEUM
GROUND PLAN STUDY



0 25 50 100 FT



TERRITORY OF THE ALPINE

Amazing what happens when everything is cut off. When none of the virtual forms is fully present in the picture. This produces something remarkable in the way of expression. A tacit extension of the pictorial space, so that only a part of the whole is realised. One is enabled to put many things into the picture without over-crowding. This tacit extension of the pictorial space provides a kind of liberation in brackets.

It is very interesting; let us look into the possibilities. The silence of the complements seems to express something sudden. Here you have a context in which limits and partial forms play a crucial role.

The decisive question is how the cutting out is done. The omissions might look accidental or capricious. That would be over-doing it. If this is not the case, we have the impression of being able to see only a part, that all the rest is silent, and that this silent part might be supplied. What is essential is that the most interesting and most important part of the whole is brought out. Form may be characterised as static or dynamic. The static consists chiefly of the vertical and the horizontal on the basis of gravitation. The dynamic is more curved. There is also a possibility of combining the two; then the inside and the outside can coincide.

- Paul Klee¹

¹Jurg Spiller, ed. **Paul Klee Notebooks Volume 1: The Thinking Eye.** New York: Wittenborn, 1961.

6

CONCLUSION



1938/v 2: *Interim near Easter*.
Oil on burlap.

Passage indicates a duality in form: one of separation, boundary and stopping; one of continuity and movement. Both are necessary in the spatial and temporal perception of our environment. The tension between them and their exchange create the excitement and drama of passage. Passage is the experience created by the reciprocity of space, built forms and motion.

Passage is the act of passing or migration; change or progress from one process or condition to another. Passage incorporates both the forms of the path and the place to which it relates. Transitional forms signify passage: a road, path, opening, hall or corridor. The act of passage allows for the transfer of visual and other perceptual information from one territory to another. For an environment to foster associations between territories, the reciprocal nature of continuities must be planned and built. Motion brings these forms to life.

Passage is also a temporal experience. Time and its effects on our perceptions of space are

felt in the course of a day as well as the course of a century or longer. The duration of the experience, the frequency, the movement of light and shadows, sounds and smells--all affect the perception of time passage. Passage in time for a town form is that of growth and decay. The decision to follow existing patterns or to alter those patterns has been a significant factor in the planning of our urban environments.

Passage in life is a time of vulnerability and opportunity. Passage in life is not permanent as a form, but is driven by its dynamic nature. Marking the event or process is a way of making passage permanent. Culturally we mark rites of passage and association in architecture by the demarcation of territories. Spiritual empathy with the process of passage is enhanced by the markers that we place. Rites of passage that brand the event within us ascribe meaning to the passage. In marking passage we ascribe meaning to the form of the motion. In turn, the form of the space may give meaning or definition to the

activity. Architectural passage has stability and permanence yet is part of the dynamic evolution of our environment.

In marking passage, in ceremony or in concrete form, rituals take on the meanings that we associate with the events. These are patterns of recognizable forms or events which are associations that are common to a group. Rituals acquire meaning through repetition, recognizable form, and some connection or adherence to community value. Rituals channel understanding. They are markers in the continuum of lifecycles and reference points along which we move. This understanding may be represented in the built environment through the repetition of elements, dimensions or individual territorial expressions within a given framework.

Passages, although equally meaningful, may only be special in the ordinary qualities that we experience in every day occurrences. These are associations with places as the form of the landscape, the street or region. When these

"ordinary" places are examined, we find that the form is ordinary only in that it is repeated and understood within the context.

Relative frames of reference--one stationary and one moving--are necessary elements of passage. For the observer within the environment, there are the elements that stay and those that move on. The separation of these differing forms takes place within the same space and yet provides two separate experiences. In observing the differences we look to the nature of the space around us as well as to the observers. Passage must allow us to contemplate where we have been, where we are, and where we are going.

Through passage, we join the forms of demarcation and their adjoining territories. Physical openings or connections invite passage. Architecture must facilitate the dialogue between both sides of demarcation.

The interaction of connections and parallels of form and meaning are the ways through which we comprehend the environment. Passage, the shared zone between inside and

outside territories, must exhibit the exchange. The attitude fosters direct and comprehensible linkage of movement and experience.

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